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Education for the Alleviation of Poverty: A Comparative Study of Conditional Cash Transfer Programs to Improve Educational Outcomes in Nicaragua and Colombia

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Education for the alleviation of poverty: A Comparative Study of Conditional Cash Transfer Programs to Improve Educational Outcomes in Nicaragua and Colombia

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Dedication

This work is dedicated to all of those who have supported me this far and to all of those who will carry me further.

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Education for the Alleviation of Poverty: A Comparative Study of Conditional Cash Transfer Programs to Improve Educational Outcomes in Nicaragua and Colombia

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The importance of education for individual well-being, social cohesion and economic growth is widely accepted by researchers and policymakers alike. Yet there exist vast numbers of people around the world, largely poor, who continue to lag behind wealthier people, often within their own nations. Conditional cash transfer programs were created to encourage investments in education and health by subsidizing their cost and changing household preferences. The programs increase short-term income as well as future wage potential, thus decreasing short-term and long-term poverty, as well as the poverty that is passed from generation to generation. Begun in Mexico and Brazil, the conditional cash transfer model is being replicated in many countries, but its replicability across socioeconomic and political contexts is far from clear. The present study adds to the research on conditional cash transfer programs through a comparative quantitative

analysis of the effects of two programs on key educational outcomes in Nicaragua and Colombia.

Using secondary panel data for the Nicaraguan *Red de Protección Social* and the Colombian *Familias en Acción* programs, a model reflecting demand constraints to education is used to determine the relative impacts of individual and household characteristics in the schooling decision, as well as to measure program impact in some of the most impoverished communities in the two countries. The empirical analysis is situated within a description of the historical, political and demographic contexts into which the programs were introduced. The results indicate that both programs increased enrollment and attendance, with lesser but still positive effects on retention. These effects were stronger for boys in Colombia, as was the importance of schooling expectations in determining enrollment. The study suggests that conditional cash transfer programs should be effective in other settings in which low educational attainment is caused largely by a lack of household resources.

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CHAPTER 1: INTRODUCTION

Although much progress has been made worldwide in decreasing poverty, increasing access to education, and locating synergies between the two, there remains a large amount of poverty in the world. The incidence of poverty more often than not is correlated with low levels of literacy, educational attainment and other measures of human development. Despite growing agreement that basic education is a human right, in many countries primary and secondary enrollment are significantly less than 100%. Educational attainment can often be attributed to a lack of supply of schools but in many places, despite adequate supply, one finds significant percentages of school-aged children who do not attend school. Given the link between education and increased quality of life for individuals and their descendents, underinvestment in education among the poor remains a serious problem.

STATEMENT OF THE PROBLEM

This dissertation addresses a relatively new family of social and educational programs designed to alleviate poverty in the nations in which they are implemented. Conditional cash transfer programs (CCTs) subsidize the costs of schooling and provide incentives to invest in human capital (health, nutrition, and schooling) to address short-term, long-term, and intergenerational poverty. Originally developed for implementation in Brazil and Mexico, these programs

have been replicated all over the developing world, particularly in Latin America. The model is currently under pilot in New York City, a rare case of policy diffusion from developing to developed countries. Yet the extent to which the model: 1.) is truly successful in meeting its aims and 2.) can be implemented across diverse contexts has not been fully determined.

BACKGROUND OF THE PROBLEM

Although income has increased in many undeveloped countries, the increases have not been equally distributed. In fact, those at the lower economic end of the spectrum have experienced an increase in poverty as opposed to a decrease. Though impoverished people and low-income communities can be found all over the world, there are regions in which poverty and particularly income inequality have been especially pernicious. Latin America, the setting for the programs discussed in this study, has the second highest level of income inequality of any region of the world. The inequality is based in history, but has been perpetuated through various institutional, political and cultural practices (e.g. Arnove & Torres, 2003; Hanson, 1995).

In addition to income inequality, Latin America retains great inequalities in education, low educational mobility between generations, and unequal health outcomes.

For the most part, Latin American educational provision has never rivaled that of the United States, due to a variety of factors. First, unlike in America, local communities have not broadly championed the cause of education. It has traditionally been left up to

the central government to make these investments, but because universities are the institutions that serve the interests of the government most directly, it is this level of education that has received the most attention and funding (e.g. deFerranti et al, 2004; Patrinos, 2001). At the primary level, the wealthy have always had access to private schooling, and so have had little impetus to advocate for broad access to schooling. Thus, while some countries like Mexico and Brazil have been able to achieve high levels of school participation and literacy overall, the lowest income people within those countries have not shared in this benefit. The intervention of the international community via such initiatives as the Jomtien Education for All initiative and the United Nations Millennium Development Goals has helped to call attention to the stratification and has reinvigorated governments to take responsibility in this arena (Colclough & Lewin, 1993). At the same time, non-government organizations (NGOs) and multilateral institutions such as the World Bank and the International Monetary Fund have increased efforts to provide funding to governments that wish to implement educational reforms, particularly those with a focus toward increasing access to underrepresented groups.

Currently the inequalities in education are narrowing among children under 12 (de Ferranti et al, 2004; World Bank, 2001; Sen, 1999). However, the secondary and tertiary enrollment gaps have grown, and the quality of schooling remains highly stratified in Latin America, as in other parts of the world. The gap in literacy and

schooling attainment between the poorest and richest income quintiles for Mexico, Brazil, Colombia and Nicaragua are presented in Appendix 4. As an example, while 99% of Brazilian adults in quintile 5 reported being fully literate in 2000, only 67% of adults in quintile 1 were literate (de Ferranti et al, 2004). A similar 30% disparity existed in Mexico and Nicaragua. As discussed in depth below, the gaps in educational enrollment, attainment and quality have a serious impact on human capital development, and thus on the returns to education in the form of wages. Other factors such as race, gender, and place of dwelling - urban versus rural - continue to affect the quality of education as well as job prospects. Indigenous and African-descendent people receive the least education and are less likely to be able to convert education to earnings. These in turn are thought to contribute to low educational mobility. Low-income parents cannot afford to send children to school, and have low expectations for future earnings, so they do not invest in schooling (deFerranti et al., Patrinos, 2001, Becker, 1981). This in turn contributes to maintaining a level of inequality even in the face of equalizing educational opportunity. In other words, even as the supply of education has become more available, demand has not responded in many marginalized groups.

Reform since the 1990s has been shown to be in many contexts oriented toward shoring up the public sector as a whole. In Brazil, for instance, Presidents Cardoso and Lula have sought to modernize and integrate the nation into the world economy through economic stabilization, development of the social infrastructure, and more

resilient institutions for taxation. Colombia has taken similar measures. In each of these countries, the shift to widespread social welfare has been part of the overall transition toward a modern, more developed society.

On a macro scale, in addition to increasing broad support of education for efficiency purposes, policy makers have begun to target expenditures to the most vulnerable populations. On the supply side, programs have been designed to build facilities and supply more teachers and school materials as well as to provide bilingual instruction, for instance to indigenous students. On the demand side, scholarships and other cash transfer programs are designed to increase equity by reducing the constraints on schooling faced by impoverished households.

PURPOSE

The purpose of the current study is twofold: 1.) To provide a quantitative analysis of the impact of conditional cash transfer programs on educational outcomes in Nicaragua and Colombia and; 2.) To compare and situate these analyses in deeper social and historical context than they have traditionally received in the CCT literature. Analysis is focused on the comparison of program outcomes through regression, using panel data to measure the effects of the interventions across multiple individuals over a number of years of some of the most marginalized populations in each country. A selection of independent variables reflecting human capital theory is used, including individual, household, and community-level

characteristics. The outcome variables of interest are: school enrollment, attendance, retention and schooling expectations.

RESEARCH QUESTIONS

1.) What has been the effect of the Nicaraguan and Colombian CCT programs on schooling outcomes (enrollment, attendance, and expectations) for individual children?

2.) What has been the effect of the Nicaraguan and Colombian CCT programs on aggregate schooling outcomes (enrollment, attendance, and expectations) on participant communities?

SIGNIFICANCE OF THE STUDY

The current study adds to the investigation of conditional cash transfer programs in a number of ways. First, while the Mexican and Brazilian programs have been studied fairly extensively, subsequent programs have not received the same amount of attention. Where most have had an external evaluation team to collect and analyze the data and produce an impact evaluation report, the extensive time investment required to carry out these studies has limited the pool of researchers. For the programs discussed in this study, a very small number of individuals have produced the literature. The comparative approach taken here is unique. The conditional cash transfer programs in Nicaragua and Colombia, while similar in concept, have been implemented in vastly different contexts, and program design has reflected local constraints. The analysis of such distinct contexts in the framework of one study increases the relevance for policy replication. Additionally, the fates of the programs within the

countries have been quite different, and in themselves provide a fascinating context for considering aspects of policy implementation.

Lastly, from the perspective of the researcher, accessing and analyzing the information used in this study has the benefit of not only investigating the impact of the implemented programs and policies, but also shedding light on the populations involved. These are individuals and families who have in many ways been invisible for generations, particularly to the Western world. Although time constraints required the use of secondary data, having access to the survey instruments as well as the responses of individuals through the data sets allowed for a detailed picture of the life circumstances of the individuals served by each program. The fact that these programs have focused on the very poorest and most marginalized members of society within countries both relatively wealthy and extremely poor leaves the possibility that they could also be used to address constraints facing equally marginalized populations within very rich countries like the United States. At the same time, the successes and failures of implementation, when addressed seriously, can help to increase the success and to minimize negative effects on the communities involved.

LIMITATIONS

There are two major categories of limitations to be addressed at the outset: theoretical limitations and data limitations. With regard to the former, as with any theory, the theory of human capital focuses on certain variables and leaves out others. Since human capital theory is

highly valued in some fields and less valued in others, programs and research that use it as a basis for analysis are often subjected to harsh criticism. It is used in this investigation partially because it is the theory that informed the development of the programs in question. This allows for an analysis of how well the program assumptions bear out empirically in these programs. It has also been widely documented that a major reason that poor children in particular do not attend school is the need to work or that the cost of schooling is too high (e.g. Glick & Sahn, 1997; Sen, 1999; Arnove & Clements, 2003). Since this is a fundamental assumption of human capital theory, it is natural to evaluate the data using that framework. It is recognized that there are other possible frameworks for evaluating the effects of the programs, as well as determining the ultimate sustainability of the educational and other outcomes.

The data limitations merit more extensive discussion, to be taken up in the chapters devoted to methodology and the specific programs. In general, since it was necessary to rely on secondary data, it was also necessary to accept that some questions were not asked, or were asked in a different way than would have been optimal for the current analysis. The information was gathered by survey; and while this offered a far more detailed description of the communities served than in many cases had ever been carried out in these places, it allowed room for considerable error, both due to self-reporting and to mistakes in interviewing and recording. Data collection in Third World contexts provides its own set of challenges, including

accessibility and the often low level of educational attainment in the target population. In spite of these limitations, the data has allowed for adequate investigation of the research questions.

ORGANIZATION OF FOLLOWING CHAPTERS

The remaining chapters are organized as follows: Chapter 2 is a literature review describing human capital theory and the economics of conditional cash transfer programs, as well as a review of the major literature on the Mexican and Brazilian CCT programs. Chapter 3 is a general explanation of the methodology common to both the Nicaraguan and Colombian data sets. Chapter 4 is an in-depth presentation of the historical context, demographic environment at the beginning of program implementation, and detailed program information for the Nicaraguan *Red de Protección* (RPS) program and the Colombian *Familias en Acción* program. Chapters 5 and 6 present descriptive statistics and findings for Nicaragua and Colombia respectively. Chapter 7 concludes with the policy implications and future research suggested by the study. Detailed supplementary information can be found in the appendices.

CHAPTER 2: REVIEW OF THE LITERATURE

This chapter begins with an explanation of conditional cash transfer programs and the theory that motivates their design. This is followed by a presentation of the limitations of the theory when applied to empirical research and how these influence program design. The last two sections of the chapter are devoted to providing a brief history of the first two major conditional cash transfer programs and a review of the research generated around them.

CONDITIONAL CASH TRANSFERS

Policy to increase educational attainment in developing countries has generally focused on supply-side interventions. Assuming that the major impediment to use of schools is a lack of the facilities and personnel to manage them, such programs have failed to achieve significant improvements in educational outcomes (Skoufias, 2001). The shortcomings of such reforms have led researchers and policy-makers to devise a different sort of program, shifting the focus to demand-side interventions that address the consumption behavior of those that would receive the services. In poorer communities, in which the long-term returns to schooling are less well known and objectively less certain, the immediate cost of schooling is thought by human capital theorists to be one of the most critical factors in the decision to attend or not attend school.

Though implemented in many different nations and communities, all conditional cash transfer programs have as a primary objective to

decrease the intergenerational transmission of poverty and have identified education as the means by which this will be accomplished. Following from the assumption that cost is the chief factor keeping poor children out of school, each program relies strongly on financial incentives to decrease the short-term costs of enrolling in school (De la Brière and Rawlings, 2006; Skoufias, 2001) by providing cash transfers to poor families. In order to encourage school enrollment and investments in other productive forms of human capital, cash receipt is conditioned upon keeping children in school, making regular visits to health clinics, and attending nutritional talks by health professionals. Developed in Brazil and refined and expanded in Mexico, CCTs have been replicated throughout Latin America with the help of the World Bank and other multilateral institutions as well as NGOs, and are being tested for replication in Africa and the United States. In general, these programs have been designed by central governments in collaboration with the international aid community, and involve participants selected by central survey instruments. They also tend to consolidate in one ministry a number of functions typically performed by several, for example health, nutrition and education.

From a macroeconomic perspective, social assistance reaps greatest dividends for a country when it helps individuals to contribute to society in a productive way by encouraging human capital accumulation (e.g. Farrington & Slater, 2006). Social assistance should be efficient, delivering the greatest benefit using the least possible resources. Transfers to the poor have traditionally often been in-kind,

providing for example food to poor families. Policy-makers originally thought that these allowed better specification of resources and provided less opportunity for corruption than would cash transfers. It was thought that given cash, families might not purchase goods such as food, but rather spend it on less productive goods, such as cigarettes, alcohol, or televisions. In recent years, however, in-kind transfers have been criticized for inefficiency, in particular the costs of administering their distribution (Farrington and Slater, 2006). This has enhanced the desirability of cash transfers in the policy debate. In addition to greater efficiency, cash transfers have the potential to contribute to overall productivity in a way that transfers of products might not: through increased demand for a range of goods and services, or through possible investment of the additional cash in productive enterprises by beneficiaries themselves. Though much of the cash generally goes to consumption (e.g. Hoddinott & Skoufias, 2004; Moore, 2009), especially in the most impoverished families, there is still some expected margin of investment and increased productivity.

Economic foundation of conditional cash transfers

The design of conditional cash transfer programs is based primarily on human capital theory, originally developed by Gary Becker (1965, 1975, 1993), Jacob Mincer and Theodore Schultz. The general principle of human capital theory is that just as investments can be made in goods, or physical capital, they can also be made in humans. In fact, it is argued that in order to increase the economic output of a

society, investments *must* be made not only in physical infrastructure, but also in the human participants (Becker, 1994). These investments may take several different forms, principally in health, education, and training; and as with any investment, that which is put into human beings can yield returns in the future. A characteristic peculiar to human capital is that it cannot be sold or given away (Schultz, 1971), nor can it be transferred. If an individual leaves the job or country in which he or she has received education or training, that education will leave with that individual to benefit the next firm or country. This has practical implications for the way in which educational investments are funded, and the way that incentives are used to encourage them. This theory has both micro and macroeconomic consequences and over time has become a central part of neoclassical growth theory (Langelett, 2002). Investment in human capital contributes to greater productivity in the labor force, which in turn leads to greater economic growth.

Assumptions of human capital theory

The classic formulation of human capital theory embodies several major assumptions. One that has had great implications for educational development in impoverished communities is that in aggregate, genetic endowments and intellectual promise are distributed evenly across groups and nations, so differences in productivity are due not to these endowments, or even fully to the availability of natural resources or infrastructure, but rather to lesser investments in human capital (Psacharopoulos, 1987; Langelett, 2002;

Sen, 1997, 1999). This finding was inspired by, and evidenced in the greater economic progress in some equally impoverished communities between and *within* nations.

The key decision-making unit in human capital theory is the individual, assumed to make rational decisions based on knowledge of the consequences of those decisions. A driving principle behind human capital theory is that individuals will always seek to "maximize their well-being as they accumulate human capital over their lifetime" (Becker, 1981, 5). In other words, they will choose the amount, nature, and timing of education, training and other such investments based on calculation of costs and benefits. As human capital is considered the chief determining factor in raising income, the theory places the individual as the key decision maker with regard to his or her own standard of living.

At the aggregate level, there is an assumed social benefit to the individual decision to invest in human capital. Langelett (2002) summarized the key ways economists have determined over the past four decades that human capital accumulation in individuals, particularly education, contributes to overall societal advancement:

- Education allows for the more efficient use of existing resources;
- Education/literacy is correlated with better health, higher life expectancy and lower infant mortality;
- Education creates greater research capabilities, which lead to technological innovation;

- Education raises the productivity of the workforce and generally increases the likelihood that workers will seek additional training;
- Education increases people's adaptability to change/growth;
- As educational levels increase for women, the opportunity cost of staying home to raise a family rises, thus reducing the fertility rates for women and increasing labor force participation rate; and
- Education contributes to moral and mental growth and greater social cohesion. (Becker, 1993)

The implication of the social benefits of human capital is that firms and/or governments have a stake in promoting and coordinating its development by providing opportunities and influencing the choice of individuals to invest in themselves: i.e. to coordinate the private decision such that it favors the whole.

There are many types of conditional cash transfer programs, but they fall into two major categories: those designed to serve the chronic poor (de Janvry et. al., 2006) and decrease intergenerational poverty; and those whose primary function is to provide temporary financial relief from shocks such as natural disasters. The former is the focus of the research presented in this dissertation, specifically those programs that include education as a significant component.

Effects of conditional cash transfers on household behavior

In order to devise policies to influence household behavior, it is first necessary to understand the decisions facing households. Various researchers on CCTs (e.g. Skoufias, 2001; Behrman et al., 2005) have placed the programs in their economic framework, providing a rigorous explanation of the possible effects on the household budget, and via that mechanism, on school enrollment. The framework will be sketched here as briefly as possible while still providing a thorough enough treatment for present purposes. Skoufias' explanation mirrors and refers to Becker's (1981) formulation of human capital decisions for the household level, as well as to other more recent research.

At the household level, households are assumed to have preferences summarized by a welfare function and bound by constraints, chiefly income, and time. The general task of any household is to maximize its welfare within the present constraints. The particular behavior of the household welfare function has been theorized in different ways. Becker's original (1981) model was of a unified household whose preferences follow that of the head. Becker further assumed that the head was altruistic, and allocated resources efficiently and equitably among members.

The basic production function describing human capital investment in a child is:

$$H = h(t_{cH}, t_{mH}, X; \mu, K)$$

where tcH, tmH, and X are the major inputs, and μ and K variables that can affect those inputs.

X - purchased goods for human capital investment (e.g., books, medical care).

K - parental education, community characteristics, knowledge.

μ - biological characteristics of the child (e.g. intelligence, health)

t_{cH} and t_{mH} - time contributed to human capital formation on the part of the mother and the part of the child, respectively

As mentioned above, differences in earnings are thought not to be due as much to genetic variation as to differing investments in child human capital. Much of the household utility for education is derived from expected future earnings of the children. While parents are assumed to want to maximize these future earnings, they are also constrained by the number of children and the maintenance of some level of household consumption. The parental welfare function is as follows: U = U(E,Y), where E represents the child's future earnings and Y represents household consumption. The role of the parents with regard to human capital investment and household consumption is to choose the level of purchased goods for human capital investment (X above) and the consumption of all other goods (Y), and to allocate child and parental time across activities:

> At the optimum households equate the marginal rate of substitution between adult children's earnings and household consumption… with the marginal cost (MC) or 'shadow price' of investing in the human capital of a child. In addition, households will allocate child time (tcH), parental (tmH) time and market resources (X) to equalize the marginal costs associated with each activity and resource. (Skoufias, 2001, p.15).

Marginal cost is generally defined as the cost to produce one additional unit of output; in this case, it refers to the cost of contributing more of the child and mother's time to schooling. Also known as shadow price, marginal cost is a key determinant of the investment decision. The equation to summarize this condition is as follows:

$$MU_{c1}(W_1\text{-}p_s) = \beta MU_{c2}t_2W'_2(S)$$

where W_1 represents the child wage rate, p_s represents the subsidy (transfer) paid for schooling, β the discount rate of future earning, t_2 the amount of time spent working as an adult, W'_2 the adult wage rate, and S the amount of schooling. Here, the left side contains the total cost of schooling, both direct and indirect[1] and the right side the marginal benefit in increased future wages. The decision to invest or not invest in education revolves around the profitability of the

[1] Due to foregone wages

investment or rate of return.[2] In order to choose education, there must be a real or perceived higher return, in terms of real earnings, from learning than the present value cost of the learning (Becker, 1981, 59).[3] The higher the expected wage, the higher the tolerance for investing in education. This partially explains the greater usual investment of families in boys' education, as men are expected to earn higher wages than are women (Behrman et al, 2005) as well as the commonly observed discrepancy between urban and rural educational attainment. The use of a higher subsidy for girls in some CCTs and the focus on rural areas in others reflects this understanding.

Moving from equilibrium, any change to the human capital production function can lead to a change in the shadow prices of various commodities and thus to a change in household behavior. Additional income in pure cash should shift the demand curve without changing preferences, i.e. change the production function of the household, but simply increase the amount of each commodity equally (Becker, 1981; Skoufias, 2001). However, changes in the factors affecting the marginal cost of inputs to human capital – namely, time or goods - may cause substitutions among goods and activities to minimize overall costs. If marginal cost of an input increases, its use will decrease, and vice versa.

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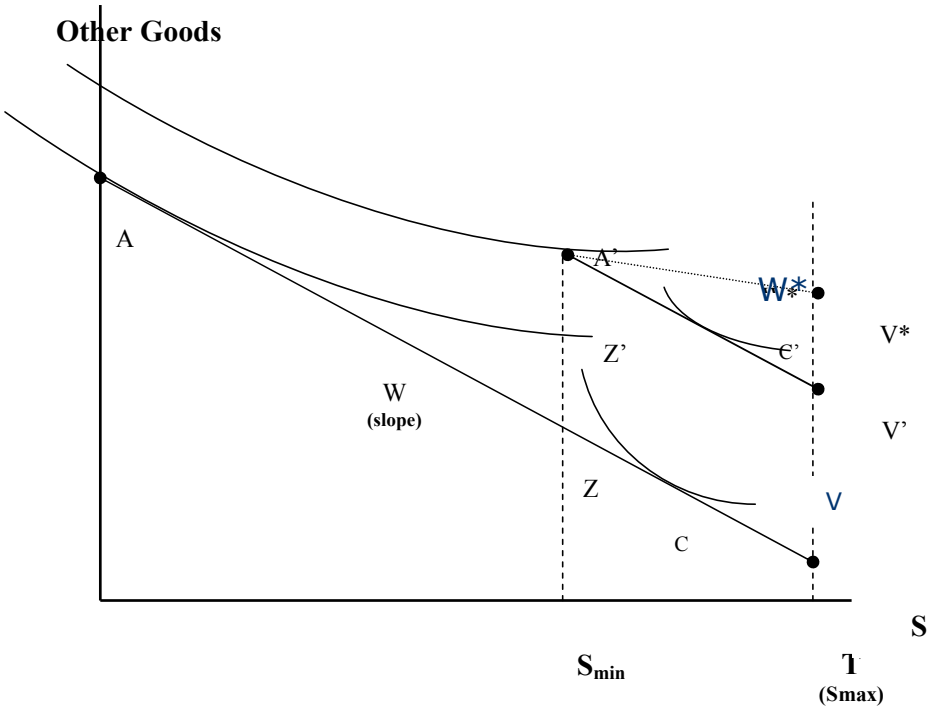
[2] This statement assumes perfect information on the part of the individual. In actuality, it is the perceived profitability or rate of return that underlies the decision to invest in schooling. This will be discussed in more depth below.

[3] Becker noted that internal rate of return may be more accurate way of measuring, as it equates the present value of returns to present value of costs. This more accurately reflects the day-to-day calculus of a real individual making the decision to invest or not invest.

The theoretical effects of conditional cash transfers on different types of households are summarized in the following diagram:

Figure 1. Effect of CCTs on Family Budget.



The x-axis (S) represents the amount of the child's time that is devoted to schooling and the y-axis all other goods, since time spent schooling equates to lost goods due to lost wages. At lower amounts of time in school, this graph assumes that work time fills the time not devoted to schooling.[4] At the far left of the x-axis, a child would be working all the time and devote no time to school (unenrolled). At the

[4] This is somewhat problematic in the case of many girls, as the trade-off for school time is often not wage labor, but rather household activity. See Lincove, 2006 for a discussion and example. Skoufias (2001) explains this by assuming that work at home is perfectly substitutable for market work.

far right, the child would be enrolled with 100% attendance at school, so that all non-leisure time was devoted to school and none to work. For any child dividing time between work and school, the line AV describes the opportunity set of the households, with the slope of the line equal to the real market wage (W) of the child, the number of goods that can be purchased with the wages earned in one hour. This represents the trade-off between schooling and other goods available to the household, as for each extra hour devoted to school, W units of additional goods are sacrificed.

The diagram represents two different types of households classified according to the amount of time that the child spent in school before the implementation of the program, or receipt of a cash transfer. (T) represents maximum attendance in school, where all non-leisure time is devoted to school or homework. (V) represents the initial amount of labor income received (very low), or amount of other goods available in the household when the child devotes all time to school. (A) and (C) represent households with children:

(A.) Child initially not enrolled in school

(C.) Child initially attending school at near 100% attendance rate

A cash transfer will have different effects on the behavior of households with children at these two states of initial attendance. As the graph implies, there is a minimum conditional cash transfer that

will be required in order to encourage a household to send a child to school, and the size of this cash transfer will depend on the household's initial location along the budget line.[5]

On the graph, Smin represents the time devoted to schooling at the attendance rate required for a CCT (e.g. 80 - 85% in the case of the programs discussed below). Z' is the intersection of household A's indifference curve with Smin, so the amount of total income required to make the household just indifferent between sending the child to school and sending the child to work instead. Z represents the *actual* amount of income that Household A would receive, without a subsidy, if it were to send the child to school the minimum amount required by a CCT program. As can be seen, this amount (Z) falls below the income desired by the household; the amount of other goods that could be purchased is too low to produce the desired utility for that household. Thus, without additional income, the household will not invest in education. The difference between Z' and Z represents the minimum amount of transfer needed to cause the household to send the child to school.

This particular graph assumes that the employment opportunities, and thus market wage, for each household are similar.[6] Thus, the slope of the budget line for each household is considered the

[5] Definition: the budget line represents the maximum amount of goods household can afford, particularly the rate of trade-off between one and the other, in this case schooling and everything else.

[6] As, for example, in one community, or in communities that are similar

same. The indifference curves[7] at A and A' and C and C' represent the households of the children previously described. For the family including child C, with near perfect attendance at the beginning of the program, the initial constraints on human capital investment are not binding. In this case, a cash transfer will not change the behavior of the family in terms of enrollment, but will simply provide an income effect, perhaps allowing the child to devote more time to study, by offsetting that much more of the opportunity cost due to lost wages. A'V' shows the budget line for this household after receipt of a cash transfer. The transfer results in a shifted budget line within a region between T and Smin, with no change in the slope (W). The income transfer raises the amount of non-labor income (or goods available), as represented by V'. (V' – V) represents the maximum amount of benefits available to a household that complies with all requirements of the program. By way of comparison with the household already enrolling the child in school, the dotted line shows that for a household not already enrolling, the cash transfer reduces the marginal cost of schooling, thus reducing the shadow wage and changing the budget line[8] such that the price of schooling relative to other goods decreases. As with Household C, an income effect is observed, but for Household C, the income effect is coupled with a substitution or price effect, the substitution of schooling for some other goods.

[7] Definition: Represents the consumption preferences of the household. Each point on the curve represents a different combination or "bundle" of goods that is equally preferable to the household as any other set of goods on that same curve.
[8] The derivation of W* and V* is mathematical, and left to other sources (e.g. Killingsworth, 1983, "Linearizing the budget constraint").

LIMITATIONS OF THEORY FOR EMPIRICAL RESEARCH AND PROGRAM DESIGN

While human capital theorists have been able to provide empirical data to corroborate the theory's validity over time, there are important tensions when confronted by the realities of empirical research. As acknowledged by Becker in later versions of his seminal work, the uncertainties mentioned above, as well as societal and environmental constraints, often immensely complicate the decision to invest in education.

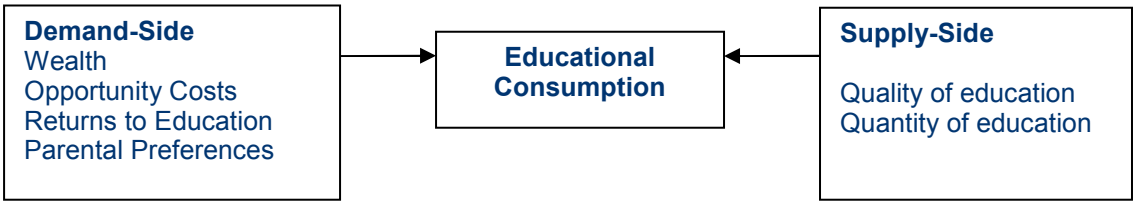
Assuming that the return to education is the most important consideration in the investment decision, as long as the returns outweigh the costs, individuals should be investing in education. Langelett (2002) concluded that the returns to human capital investment unequivocally outweigh the cost.[9] Given the exceeding return on education, then, the finding that many do not invest in it is perplexing from a purely theoretical standpoint. This is the root of the conundrum of lower-than-expected consumption of education manifested practically in lower-than-expected educational enrollment and attainment.

Becker (1993) divided the factors that influence the consumption of education into two sets: those that affect the supply of schooling and those that affect the demand for schooling. The supply-side variables are the availability and quality of schools. Demand-side variables address the issue of individual (dis)incentives to access

[9] There have been differing opinions over time as to the best particular investment, in terms of educational type and level.

available resources. On the demand side, wealth/income, opportunity cost, returns to education, and parental preferences influence the consumption of education. While different models of educational consumption emphasize different aspects, integrated models include elements of both demand and supply (Lincove, 2005). Lincove provided the following diagram to summarize these influences.

Figure 2. Supply and Demand-Side Influences on Educational Consumption[10]



There are a number of costs associated with education, both indirect and direct. Direct costs include those items for which one might have to make concrete expenditure: tuition in countries without universal free education, enrollment costs and other fees, transportation, food for lunches, school supplies, uniforms, immunizations, etc. Indirect costs, or opportunity costs, particular to schooling are wages that could have been earned if working rather than at school and time that could have been spent on domestic labor or leisure. From an empirical perspective, in order to overcome the family's reluctance to invest in schooling, the cash transfer should take

[10] Adapted from Lincove, Figure 1: Theoretical model of household decision-making concerning girls' education.

into account the family's income, the total indirect and direct cost of schooling, the child wage rate, and the expected future wage rate due to increased schooling.

Of the possible demand-side factors, Langelett (2002) argued that the major factor in making the educational decision is opportunity cost. In addition to diverting funds from short-term consumption, households must divert funds from longer-term investments, such as housing, small businesses or financial markets. In the case of the more affluent, the chief issue is whether the expected future return to education exceeds the present cost of acquiring it. In the case of the less affluent, particularly in developing nations, an added issue is whether it is possible to even afford the immediate costs of acquiring education.

Based on these considerations, several explanations have been offered to explain underinvestment in education. In addition to the fact that individuals and families often lack the necessary funds to attend school at all, the costs for schooling are immediate, while the benefits occur far in the future. Due to discounting of future benefits, the utility of investing in education is often less than that of sending a child to work (Becker, 1993; Behrman et al., 2005). Additionally, not all schools and training opportunities are created equally, and poor quality schools can often discourage investment in education. In both developing and developed nations, once an individual has a child, the opportunity cost of additional school skyrockets, due to the additional cost of feeding and the time required to care for babies. This is

obviously an important factor in communities in which children are born to young parents. Becker also noted that in economically depressed areas, including marginalized communities in wealthy countries, lower earning potential due to limited employment discourages individuals from investing. This is really a problem of low *actual* return to education. Lastly, educational returns do not necessarily accrue to the parents, who are the ones who must make the initial investment.

In addition to low actual returns to education, there is the problem of uncertainty in calculating the return. In the third edition of the original work on human capital (1993), Becker acknowledged this uncertainty and the discrepancy this causes in observed educational participation. The uncertainty involved in calculating returns to education comes from several factors: uncertainty about length of life of any given human being, difficulty an individual has in assessing his or her own ability and future earning potential, and the long investment period, which makes it difficult to capture real-time data on the investment. All of the uncertainty increases the risk of schooling (Psacharopolous & Patrinos, 2002), decreasing its desirability in comparison to more short-term investments.

Conditional cash transfers seek to mitigate these difficulties not only by increasing income as in the case of unconditioned transfers[11],

[11] In theory, transfers are not needed in order to increase the welfare of a family; a family would simply use additional cash according to its own preferences, which would increase its overall utility and welfare (Behrman et al, 2005; deBraw and Hoddinott, 2007). The conditioned transfer alters preferences in a way deemed appropriate by those using them as incentives.

but also by lowering the marginal cost of investment in education so that parents will choose to do so. While increasing the time spent in schooling often bears a cost in terms of lost wages, there is an expectation that the higher future earnings will offset the cost and that other individual and social benefits make investment worthwhile. In the short-term, the conditions attached to receipt of the stipends change the families' preferences in favor of schooling. Additionally, the other aspects and conditions of these programs (e.g. nutrition talks to mothers, health visits) help make the time spent on schooling more productive overall, as well as relative to other activities.

DeBrauw and Hoddinott (2008) detailed the private and public costs and benefits to conditionality. By their account, the public purposes of conditioning are to: 1.) allow the government to decide which benefits citizens spend money on, as when it is thought that people will not choose as wisely themselves as the government would choose for them; 2.) overcome information asymmetries in the public; and 3.) more quickly achieve the positive outcomes that are important for public embrace of a program. From the standpoint of the individual households, conditionality: 1.) helps to limit the disagreements within the household over how to allocate the additional resources; 2.) lessens the stigma attached to welfare; and 3.) prevents households from trading off future well-being for current consumption.

Distribution of funds and pooling of resources

In recent years, debate has arisen with regard to the 'pooling' of resources, or extent to which individual members contribute resources

to the household as a whole. Under the more historically common unitary model of the household, which formed the basis of Becker's analysis, each individual shares the same preferences as all others. Thus, regardless of to whom additional income is given, it will have the same effect. Evidence has shown this not to be the case in many situations, however (Haddad, Hoddinott and Alderman, 1997; Lincove, 2006, Schady & Rosero, 2007). This is not a purely academic concern in the case of CCTs. Evidence that the recipient does matter in the spending of additional income has had practical effects on the design of the CCTs discussed in this paper. In particular, numerous studies have shown that income earned or given directly to women is much more likely to be spent in such a way as to increase the welfare of all family members, especially children, than is money earned or given to men (e.g. Schulz, 2001; Duflo, 2000; Haddad, 1999).

Another problem that human capital theory poses for program implementation is low investment in girls' education. Two major reasons for this are: 1.) lower expected return on girls' education, since women typically earn less than men do and 2.) that typically once a woman is married, the benefits of her education are thought to be passed on to her new family and the family of the husband (Skoufuas, 2001). In other words, since often the benefits of education for females are passed off to the families into which they marry, families have less interest in investing in their education. Though actually rational in many contexts and so not really a limitation of the theory itself, the common bias against girls poses problems for equity

as well as for long-term growth. To counter the bias, many countries that exhibit a historical under-investment in girls' education have made policy modifications to increase the incentives for parents to send their girls to school. In the case of CCTs this has usually taken the form of awarding families higher benefits for girls enrolled in school. From a human capital perspective, this helps to give families some of the benefits upfront to offset the later loss.

As mentioned, a related assumption of Becker's original formulation was that the head of the household, be it male or female, would distribute funds efficiently and equitably to the other members of the household. Sen (1990) detailed the fallacy in this assumption. From a theoretical perspective, various researchers have reviewed how cash transfer programs address or do not address the problem. The increased stipend for girls is one way of ensuring that families do not sacrifice education of girls for the education of boys, but does not ensure equity in the way that the money itself is spent. Lincove (2006) and Skoufias (2001) have both suggested that giving the money to the household might itself be problematic. Even if more cash is given for female enrollment, the cash itself might be redistributed to benefit other members disproportionately.

Political acceptability and affordability

In addition to issues of resource distribution within households, there are issues of the feasibility of program implementation. First, the implementation of cash transfer programs can involve costs that are not immediately apparent (Farrington and Slater, 2006), the cash

transfer, the resultant price increase due to increased demand, and the need for investment in infrastructure and services target including increased demand for whatever good or service. Increasing demand can be an especially pressing problem in the public sector, because the public domain is often slow to adapt.

Farrington and Slater (2006) also presented examples of political and institutional challenges to shifting from in-kind transfers to cash transfers in countries that have previously relied on the former: strength of labor unions or sectoral resistance to the removal of subsidies (e.g. agriculture) and the relative inexperience of district level government in distributing cash versus goods. Lastly, public perception of the various policy alternatives plays a huge role in determining what is and is not feasible. Farrington and Slater, as well as others (e.g. Moore, 2009; de Sa e Silva, 2008) have argued that this last factor has been overlooked in studies of cash transfers. In particular, there is often a stigma associated with governmental handouts in developing countries just as in developed. Placing conditions on cash transfers is one way of minimizing public resistance to them and maximizing the social benefit from them.

IMPLEMENTATION IN MEXICO AND BRAZIL: HISTORY AND LESSONS LEARNED FROM FIRST MAJOR CONDITIONAL CASH TRANSFER PROGRAMS

It is evident how important the return to education is for the individual decision to invest in education. It is equally important from a policy standpoint, however, in which societies seek to leverage incentives to promote socially and economically advantageous

behaviors on a grand scale. In order for incentives to achieve the desired outcome they have to be carefully designed to respond to the body of research summarized above regarding costs and returns, and with careful attention to issues of access and equity. In this section, the origins and elements of two of the first major CCT programs will be described. This will be followed by a summary of research on them.

The first major conditional cash transfer program: Brazil, Bolsa Familia

The first comprehensive conditional cash transfer program was developed in Brazil, beginning in 1995. Brazil is a middle-income country (UNDP, 2007) with a wealth of natural resources and strong democratic institutions. However, there are large disparities in the distribution of wealth based on geography, race, and gender. In 2007, the wealthiest 1% of the population held the same amount of income as the poorest 50% (UNDP, 2007). Forty-four percent of the population is made up of African- descendent people, the majority of whom are concentrated in the poverty-stricken northeastern region. As reflected in the country comparison tables, there is almost a seven-year difference between the educational attainment of the very poorest and the very richest (deFerranti et al., 2004).

Although several impact evaluations exist on the *Bolsa Familia*, or "Family Purse" program, there is less documentation on the historical and policy-related events influencing its creation. Lindert et al (2007) provided a rationale for the formation of the program, as

well as its major components. The ideological foundation for this program was provided in the 1980 Brazilian Constitution, which included social assistance as a right for the needy. The concept was actualized through debates in the late 1980s and early 1990s around the realization that strategic initiatives needed to look past low current incomes to the underlying structural causes of poverty. Policy-makers began to realize the need to break the cycle of poverty passed from generation to generation. Legislative policy actions of the 1990s formalized social assistance, set a minimum income, and established cash transfers to counter demand-side constraints to accessing education and health facilities.

The *Bolsa Familia* is actually a conglomeration of several previous Brazilian CCTs, implemented at the municipality level and originally funded out of municipal- level budgets. In 1995, the first two CCTs were formed to serve the capitol city: the Guaranteed Minimum Family Income Program and the *Bolsa Escola*. The latter is the more well known of the two and focused on increasing school enrollment. Each of these programs possessed the key characteristics of the programs that have followed them: they were targeted to the poorest of the poor through some mechanism of selection; they paid cash to families; and the receipt of funds was conditioned. In addition to these programs, several others were instituted; of which some added other conditions such as adult participation in community meetings and seminars, or literacy programs.

The established CCTs were considered an early success (Lindert et al, 2007), to the extent that the Mexican government sent a delegation to Brazil, and then launched its own major program, *Progresa* in 1997. Also due to the success of the municipality-wide programs, the federal government began to take greater interest in them, and even to co-finance them, beginning in 1998. Then-President Cardoso created a program within the Ministry of Education to provide money to municipalities that had educational conditional cash transfer programs but not enough resources to sustain them.

The year 2001 saw the introduction of the first Brazilian federal conditional cash transfer program, when President Cardoso scaled up the municipal *Bolsa Escola* project to the federal level and placed it under the management of the Ministry of Education. Under the federal program, families with monthly per capita incomes less than 90 pesos (or half of minimum wage) and children between the ages of 6 and 15 received 15 pesos a month[12], provided that the enrolled children maintained an attendance rate of at least 85%.

Launched in the same year as the federal *Bolsa Escola*, another program, managed by the Ministry of Health was launched. Called *Bolsa Alimentaçao*, the major purpose of this program was to combat poor nutrition. While the target population for the *Bolsa Alimentaçao* was slightly different, serving lactating and pregnant women and young children, it served as somewhat of a sister program to the *Bolsa Escola*. The income requirements were the same, as were the

[12] Represents 1/6 of monthly income; thus, families received a 16.7% increase in income per month.

monetary benefits. Families were eligible for the BA until the child reached age 7, at which point the family would be considered for the school program instead.

By 2003, the need and desire to unite some of the many social programs was clear. Under President Lula, generally considered a strong advocate of strengthening social welfare (Lindert et al, 2007), a flagship umbrella program known as *Fome Zero* (zero hunger) was created, combining over 60 programs in many ministries. This also marked the beginning of the consolidation of the *Bolsa* programs into one *Bolsa Familia*. Reform of the programs proceeded through discussion between World Bank president Wolfensohn, President Lula and a key member of the *Progresa* program in Mexico, which had since its inception become the most famous and well-respected cash transfer program. The year following the creation of *Bolsa Familia*, a coordinated ministry was created to facilitate the program: the Ministry of Social Development and Hunger Eradication. This ministry was and remains in charge of maintaining the household registry used to identify target households, the *Cadastro Único*. By combining educational, nutritional and health initiatives into one program, the *Bolsa Familia* is able to serve the whole child (Lindert et al), or from the human capital perspective, to encourage investment in several areas of human capital development at once. The early goals of the program were:

> To fight hunger, poverty and inequality through cash transfers associated with access to basic social rights and promote social

inclusion, contributing to the emancipation of beneficiary families, giving them the means and conditions to leave poverty.

The *Bolsa Familia* benefit structure, like many, favored women of the household where possible. Approximately 93% of the recipients in 2005 were women. Most of the original recipients were located in the northeastern or southeastern part of the country (Lindert et al., 2007), where poverty concentration is highest. One characteristic that sets Brazil apart from the other countries studied in this dissertation is the high proportion of people living in cities, and the concentration of poverty in urban slums. While these can be found also in Colombia, the focus of the other programs discussed in this dissertation was on the rural poor, as it is rural dwellers that make up the largest proportion of the impoverished in those countries.

Table 1
Benefit structure for *Bolsa Familia* at start of program, 2003

Family status	Monthly *per capita* family income	Number of children, adolescents, pregnant women and nursing mothers	Benefits value (Rs)	% of Income	US$ 2003[13]	US$ 2009[14]
Poor	R$ 60-120 (US$ 17-34)	1	15	13-25%	$ 4.27	$3.68
		2	30	50%	$ 8.54	$7.35
		3 or more	45	75%	$12.81	$11.03
Extreme poor	< R$ 60 (< US$ 17)	0	50[15]	83%	$14.23	$12.25
		1	65	108%	$18.50	$15.93
		2	80	133%	$22.77	$19.60
		3 or more	95	158%	$27.04	$23.28

Source: *Ministry of Social Development and Hunger Eradication, Brazil, 2006*

[13] Exchange rate in 2003 was 3.513 reales/$1.00. Source: Federal Reserve.
[14] 2003 inflation adjuster = 0.861
[15] Represents the "base" amount for families in extreme poverty. . This is received regardless of family composition. . Variable benefits are added in R$ 15 increments.

The conditions attached to remaining in the program were: enrollment for primary school aged children (ages 6 to 15); daily school attendance of 85%; and a number of health conditionalities including completion of vaccines, regular health checkups and growth monitoring for children under seven, and checkups for pregnant women (Lindert et al., 2007). Unlike previous programs, failure of any child or mother to meet the appropriate conditions could result in disqualification, whether or not benefits were tied directly to that child.

Mexico: Progresa/Oportunidades

As with the other countries addressed in this paper, Mexico is highly stratified in terms of wealth. Although it is an OECD[16] country and classified as a middle-income nation by the World Bank, about 50% of the population lives in poverty (World Bank, 2009), a majority of these concentrated in rural locations, and many indigenous in ethnicity.[17] Average schooling in the lowest wealth quintile is 3.5 years, while in the highest it is 11 years (de Ferranti et. al, 2004). Approximately half of the population earns a majority of income through the informal sector, so social protection that is tied to the formal economy does not find its way to these workers. Another implication of the prevalence of informal work is that the government's ability to collect tax on income is greatly limited.

Officially named *Programa de Educación, Salud y Alimentación*, Progresa originally targeted the rural poor, but has since been

[16] OrganisationOrganization for Economic Co-operation and Development
[17] 44% of indigenous are in the lowest income quintile (Molyneux, 2006;, Skoufias, 2005; Adato, 2000).

extended to urban areas. As in the case of Brazil, Mexico has not had a history of strong support for universal welfare, or development of systems to provide it (Molyneux, 2006). However, state support for selected services has been provided since the late nineteenth century. By the 1960s, fueled largely by the emerging acceptance of human capital theory, health and education were funded by the public sector, but with great inequality between regions and socio-economic classes (Molyneux).

The economic shocks of the 1980s revealed the tenuous nature of social welfare throughout Latin America. As in other Latin American countries, Mexico embarked on a program of structural reform: decentralization and privatization of social service and social benefits such as pensions (e.g. Molyneux, 2006; Arnove, 1986) that ultimately only widened the disparities between the marginalized and non-marginalized members of Mexican society. In turning toward a new paradigm in addressing poverty in the late-1980s and early 1990s, the state embraced the concept that while welfare remained a necessity of government, there must be greater participation on the part of beneficiaries themselves, to decrease the dependency on the state. This allowed and required a greater role for the family, a greater role for the economic market itself, as well as non-governmental and community institutions.

President Vicente Fox, elected in 2000 from the National Action Party (*Partido de Accion Nacional*, PAN) was the first president in 71 years to defeat the *Partido Revoucionario Institucional* (PRI), and

made it a key component of his platform to provide greater relief to the poor. *Progresa* was the major program created to fulfill this mission. Expanded and renamed *Oportunidades* in 2002, this program has received greatest acclaim and achieved greatest apparent success to date of all conditional cash transfer programs. Most of the smaller programs created throughout Latin America have replicated to some extent the design of *Oportunidades*.

Particularly important, *Progresa* was designed with evaluation in mind. Program designers took advantage of phased implementation to allow a randomized experiment of the program outcomes (Skoufias, 2001). Further enhancing the credibility of evaluation, the project was contracted to a source external to the government, the International Food Policy Research Institute (IFPRI). Also important to the success of Progresa has been the strong presidential buy-in, collaboration among the ministries involved, and a steady source of funding, both governmental and supplemented by loans through the World Bank and the Inter-American Development Bank.

The IFPRI was charged with conducting quantitative and qualitative impact evaluations in Mexico, in seven states that were among the first states to receive the program: Guerrero, Hidalgo, Michoacan, Puebla, Queretaro San Luis Potosi, and Veracruz. The evaluation sample included a total of 24,000 households from 506 localities, interviewed between November 1997 and November 1999 using a survey created specifically for the purpose: *Encuesta de Caracteristicas Socioeconomicas de los Hogares* (ENCASEH). It was

from this survey that the eligibility status of households was determined. A follow-up evaluation survey *Encuesta Evaluation de los Hogares* (ENCEL) took place in March 1998, still before any benefits were distributed. These two surveys provided the baseline for evaluation. These in conjunction with repeated observations of the same households resulted in a comprehensive panel data set (Skoufias, 2001).

The evaluation framework was a quasi-experimental design with randomization of localities rather than households or individuals. Of the 506 localities used in the evaluation, 328 were assigned to the treatment group - randomly selected using probabilities proportional to their size from a possible universe of 4,546 localities in the seven states - and 186 were assigned to the control group by the same manner. For any outcome variables for which there were observations made both before and after the implementation of the program, all of the major impact evaluations have used the difference-in-difference estimator to measure program impacts (Skoufias, 2001). In addition to the external evaluations, the resultant databases were analyzed by Mexican academics at Iberoamericana University and the *Centro de Investigaciones y Docencia Economicas* CIDE (Escobar, 2005), a research institution.

In remaining true to the call for greater responsibility of beneficiaries, a key component of Progresa/Oportunidades, as stated in their official documentation (Molyneux, 2006; *Oportunidades* program documents), is co-responsibility, formalized through a quasi-

contractual understanding that, in return for the entitlements proffered by the programme, certain obligations are to be discharged by the two parties, that is, the programme and the participating mother. This conditional form of entitlement, although well established in other regions, and originating in the United States, has a more recent presence in Latin America, but is now being widely adopted. (Molyneux, 434)

The major conditions attached to the transfers are similar to those of the Brazilian program, with the addition of a requirement to provide a certain number of hours of community service.

By 2000, the program operated in almost 50,000 localities and provided benefits to 2.6 million families. The relative amount of the stipend is 22% of monthly income, in total about 275 pesos per family per year. Girls receive a higher stipend for participation in secondary school (US$24 for boys and US$28 for girls). As with the other programs, because this is a demand-side initiative, it is necessary that participant communities be able to offer educational and health facilities to their beneficiaries. The budget for the program in late 1999 was equivalent to $777 million, 0.2% of Mexico's GDP (Skoufias, 2001).

Table 2
Program benefits, *Progresa*

		January-June 1998	US$ 1998	US$ 2009[18]	July-December 1998
Educational grant per child					
Primary	3rd Grade	65	$8	$6.12	70
	4th	75	$9	$6.89	80
	5th	95	$12	$9.18	100
	6th	130	$16	$12.24	135
Secondary	1st male	190	$23	$17.60	200
	2nd male	200	$24	$18.36	210
	3rd male	210	$26	$19.89	220
	1st female	200	$24	$18.36	210
	2nd female	220	$27	$20.66	235
	3rd female	240	$29	$22.19	255
Grant for school materials per child	Primary-September	-	-	-	In-kind
	Primary-January	40	$5	$3.83	-
	Secondary-September	-	-	-	170
Grant for consumption of food per household		95	$12	$9.18	100
Maximum grant per household		585	$71	$54.32	625

Source: D. Hernandez, J. Gomez de Leon, 1999 and, as reproduced in Skoufias, 2001

Health provision comes through the Mexican government, in particular the Ministry of Health and the IMSS-*Solidaridad*, which provides welfare to the uninsured. A *promotora* (health promoter) is assigned to each community to provide information and explain the program requirements and schedules to beneficiaries. Nutrition talks are held within each community, at local clinics or other locations. A food stipend of $11/month is provided for children less than 2 years of age, as well as to pregnant and lactating mothers, to ensure proper

[18] 1998 inflation adjuster: 0.765.

nutrition of their babies. Compliance with the conditions is monitored at the school and clinic levels.

As summarized by Skoufias (2001), some of the distinct program elements inspired by human capital theory important in achieving the aims of Progresa were: the higher stipend for girls in secondary school, the increase in the size of the grant through grades, and the adjustment of the nominal value of the educational cash to account for changes in the cost of living.

SUMMARY OF RESEARCH IN MEXICO AND BRAZIL

The Mexican CCT program has been the most thoroughly researched, but some researchers have done studies using the data of other programs or summarizing literature on all of the programs. This section provides a summary of the major themes in CCT research, beginning with the impact evaluation of *Oportunidades*.

Direct Effects on Schooling

At the level of localities as well as at the individual level, the evaluation team found that in all cases, *Progresa* had a positive effect on enrollment, irrespective of gender or level of schooling (Skoufias, 2001). Behrman, Sengupta and Todd (2002) showed that participation in the program was associated with earlier school entry, lesser repetition, lower dropout rates, and higher school reentry rates among dropouts. Coady (2000), however, found that program impacts on school dropout were not sustainable over time: specifically, dropouts who reentered school were more likely to drop out again after a year. This finding corroborates data indicating that much of the positive

impact on enrollment has been due to increasing continuation rates rather than reincorporating dropouts (Skoufias, 2001).

As far as longer-term effects, Behrman, Parker and Todd (2005) conducted a study five years after the benefits started for *Progresa* recipients. Their focus was on those aged 9-15 in 1997, so 15-21 in 2003. Using household surveys, they performed regressions to assess program effect on enrollment in the medium term. They also assessed achievement differences using Woodcock-Johnson tests in 2003 only. They found differences of about 1/5 of a grade at that time, but did not find any significant impact of program enrollment on achievement. As a possible reason for the disjunction between increased enrollment and achievement, the researchers suggested that lower school quality could be a factor, or even decreased quality as a result of the increased enrollment through the program.

Escobar (2005) provided both a retrospective and prospective look at the program. With regard to schooling outcomes, the success of the program in increasing enrollment was reiterated especially for primary school, with enrollments nearing 100%. However, at that time, secondary school enrollment still hovered around 70%. The author suggested that there would be no further gains made in primary school and that even in secondary school, 70% might represent a structural limit on enrollment.

Qualitative research has also been conducted largely by IFPRI. In order to evaluate the educational component of the program, Adato, Coady and Ruel (2000) interviewed both school directors and

beneficiaries. School directors confirmed that the program had increased school enrollments, especially at the secondary level. In fact, as noted by Escobar, qualitative evaluation revealed that the teachers in secondary schools had become concerned about space limitations, as well as the availability of resources and educational quality.

School directors agreed overall that the program had resulted in improved attitudes towards schooling among students and parents, including families allowing more time for their children to complete homework. They noted that students were still required to do their fair share of housework and labor both on weekends and during the growing season in agricultural areas, but those parental expectations had shifted to allow for their children's schooling. At the secondary level, Adato, Coady and Ruel (2000) found that lack of interest in schooling, especially compared to the prospect of making money, still remained an important factor behind non-attendance and dropping out. Among older girls, safety transport to and from school was also a major issue. Lastly, qualitative researchers (Escobar, 2005) found evidence that parental educational expectations rose in communities that had the program, both among participants and nonparticipants.

Indirect Effects: Non-Enrollment Outcomes

Although school quality and student performance have not been major foci of conditional cash transfer evaluations and the data does not reflect many school quality variables, qualitative researchers have recognized that school quality most likely does have an effect on enrollment, as well is on the returns to education. Like Behrman,

Parker and Todd (2005), Escobar (2005) found that most teachers believed student performance not to have changed as a result of *Progresa*, or to have fallen as a result of the influx of new students, many of whom were less self-motivated than those who had previously attended. However, Escobar found that some teachers believed that the attendance requirements of the program had led to improved performance merely through greater attendance of the students.

Perhaps one of the greatest successes outside of the major intended goals has been the inclusion of groups traditionally thought to be unimportant, especially women and children. Women were empowered not only through receipt of the benefit, but also in that in some countries, notably Mexico and Colombia, the primary leadership role of liaison between the communities and the administration was reserved for a woman of the communities' choosing (de la Briere and Rawlings, 2006). This innovation has been especially revolutionary in indigenous communities, which had lagged behind other communities in acceptance of women's rights. As noted by deBrauw and Hoddinott (2008), de la Briere and Rawlings cited the increase in productive activity as a result of the transfers, with investment of approximately 25% of the transfers in enterprise activities. Much of this investment was undertaken by the women themselves. Molyneux (2006) suggested that having greater control over cash gave women greater standing not only within their households, but also within the community at large.

Another positive though not specifically targeted outcome revealed by interviews was that the women participating in the program developed new forms of social capital (Adato, 2000). The opportunity to connect with other women through the required meetings and talks allowed for information sharing and the creation of a support system.

Implementation

In addition to the evaluation of impact, research has been done on the design and implementation of conditional cash transfer programs. Many researchers have questioned the merits of conditioning cash transfers versus simply providing transfers to be used at the discretion of families. While the additional conditions attached to conditional cash transfers can be expected to mold recipient behavior, cash transfers still provide a greater level of choice and decision-making to those who receive them than do in-kind transfers (e.g. of food, fertilizer, or medicine), voucher programs in which money is to be used solely for school enrollment or scholarships predicated on the acceptance and continued enrollment of an individual in order to make use of the benefit. Despite the conditions that participants must follow to receive funds, the specific use of the cash itself is not fully stipulated. Families have the discretion to use it as they see fit.

DeBrauw and Hoddinott (2008) studied the effect of conditioning on school enrollment in an effort to isolate what parts of CCTs have led to their success. Using households and schools that failed to receive

the forms necessary for monitoring enrollment and attendance as cases for non-conditioning, they found that the absence of conditionality does decrease enrollment, particularly in the transition from primary to lower secondary school. Similarly, Behrman, Segupta and Todd (2005) demonstrated quite a large increase in enrollment due to the conditionality of the *Oportunidades* program using Markov transition analysis. Additionally, deJanvry and Sadoulet (2005) and Das, Do and Ozler (2005) found that conditionality helped to internalize the positive externalities of child education, health, and nutrition.

Another prevalent implementation issue that has received attention is the targeting and selection of beneficiaries and the exclusion of others from the program. Targeting has been carried out by the central government, often in ways that are not transparent to the recipient communities, and has at times led to tensions within those communities. This is especially apparent in those programs that have targeted at the household level, such that some families within each community were recipients and some families were not. Adato found that a majority of community members lamented the exclusion of so many from the program's benefits. It was common for people to express that "we are all poor here" and that the selection of some and exclusion of others did not seem just. Researchers have agreed that the explanation of the targeting process was not sufficient; many living in communities believed the selection either unjust or due merely to luck. Where considered unjust, as might be expected, the selection

process often led to resentment. Three quarters of the doctors interviewed indicated that their communities suffered from this sort of tension, though one quarter of those said that the tension was not serious. The most common ways of manifesting it was that non-beneficiaries resisted participation in community activities. Adato highlighted the importance of the role of locally-elected facilitators called *promotora*s and doctors in managing the relationship between beneficiaries and non-beneficiaries, in particular by welcoming beneficiaries to informational meetings where possible and stressing that maintenance activities such as community cleanups are not only for beneficiaries.

Adato, Coady and Ruel (2000) expanded upon the previous research of Adato (2000) by looking at the effects of the above perceptions on the actual functioning of the *Oportunidades* program. They confirmed that from the participants' perspectives, the aspect of the program most worthy of critique was the targeting process and identified more specific issues with it. The first major issue was with the survey method that identified impoverished households. Interviewees complained that sometimes if the family was not home when the census teams came around, they never returned, thereby eliminating the households from consideration of the benefit. Secondly, in indigenous communities in particular where different languages are often spoken, it was a common complaint that survey collectors did not speak local dialects well enough to make an accurate assessment of household means. Interviewees also presented a

number of reasons why families might not represent their circumstances completely accurately: general fear or distrust of authorities; weariness in responding to authorities inquiries with little benefit; or shame at representing their poverty in its actual depth.

While doctors and school directors did not share the belief that all of the residents of communities were equally poor, they did agree that the selection process needed to be improved to ensure that the correct households were selected. They also agreed that there is a dire need to improve communication between different sectors of the program, especially regarding the selection process. There was also some evidence that beneficiaries needed greater guidance with regard to the conditions required to maintain program eligibility (Adato, Coady and Ruel, 2000).

Table 3
Program comparison, Brazil and Mexico

	Mexico *Oportunidades/PROGRESA*	**Brazil** *Bolsa Familia*
Goal(s)	Improve the conditions of education, health and nutrition of poor families, particularly children and their mothers by providing: Sufficient quality services in the areas of education and health, Monetary assistance and Nutritional supplements	• To fight hunger, poverty and inequality through cash transfers associated with access to basic social rights • To promote social inclusion, contributing to the emancipation of beneficiary families, giving them the means and conditions to leave poverty.
Pilot Year	1997	2003
Financing	World Bank & Mexican government	Brazilian government
Total Amount of Funds	$700 million (1999)	$3.2 billion (2005)
Target Treatment Population	Localities and individual households high in poverty	Per capita monthly income ≤US $48
Age of Children	≤22	≤ 15
Maximum Amount of stipend	US $52 per month	US $45 per month
Recipients of Funds	Mothers	Mothers
Number of Recipients	2.6 million families (in 2000)	3.8 million families (in 2003, beginning of combined program)
Health Component	Basic package of primary health care services	Vaccinations, regular health checkups, growth monitoring
Stipend Delivery	Monthly by wire transfer	Bimonthly via banking system, through special agencies, using electronic benefits cards
Educational Stipend	• Higher stipend for girls in secondary school • $US 7 in primary school • $US24 for boys and $US28 for girls in secondary school	No educational stipend *per se*; benefits given by poverty level, but is conditioned on school enrollment and attendance
Level of schooling covered	Primary and secondary	Primary
Monthly school attendance requirement	85%	85%

CHAPTER 3: METHODOLOGY

This section provides methodological information common to both the Nicaraguan *Red de Protección Social (RPS)* and Colombian *Familias en Acción* programs. Specifics about the data sets, participants and analysis pertaining to each country can be found in the following two chapters. For Colombia, data is also available concerning school level conditions; this information is not available in the Nicaraguan case.

JUSTIFICATION FOR CHOSEN METHODOLOGY

The current study is a quantitative comparative analysis of the conditional cash transfer program in two countries. The analysis is based on secondary data available to the public, collected as part of the evaluation efforts by external contractors to each program. Both the Colombian and Nicaraguan data sets contain extensive panel data based on individual and household survey information. The surveys contained a range of questions covering personal, educational, income, consumption, and health information.

Quantitative analysis is used to create an objective test of hypotheses, and to collect enough observations to develop confidence that the test is valid. A good quantitative analysis should be able to determine 1.) whether a hypothesis is true within a given situation (internal validity) and whether it can be thought to apply to other situations (generalizability or external validity) (Mertens, 1998). What is most of interest in the current study are the overall outcomes across

control and treatment groups, rather than individual experiences or the process leading to the outcomes, questions that would be more appropriately determined through qualitative means. Given the complexity and size of conditional cash transfer programs, determining whether outcomes such as increased enrollment are due to the program or not and what factors contribute to that outcome would be very difficult to isolate without using quantitative means.

The comparative element of the current study is relatively unique. Given the time- intensive nature of gathering and evaluating the data, most statistical studies of CCTs to date have been limited to major impact evaluations within one country (Duflo & Kremer, 2003). Although multifaceted within the country of focus, these do not address specifically the differences in program design and outcomes across more than one context. Looking at the data from more than one country, using similar variables and the same theoretical model, allows for an in-depth analysis of each, but still provides a comparative lens. One can determine which variables perform similarly and which do not. The quantitative and comparative approaches can be complementary: as the chief benefit of research is generalizability, a chief benefit of comparative research is the potential to universalize (Lijphart, 1971).

The quantitative comparative approach provides a unique opportunity for theory building. Identifying the variables in which the two countries differ, either in terms of outcomes or in the independent variables influencing them, and then looking carefully at the social, historical or political differences between the two countries allows for

the posing of new questions and operationalization of new variables around those differences. This study, with N=2, is only a start to the process, but is a valuable foundation for future work applying theoretical models across already-available data.

DESCRIPTION OF DATA SETS

The data in Nicaragua and Colombia were both fashioned after the same overall model, and so were very similar in design and information collected. The data were collected via household survey, a method very common within other research designs (Mertens, 1998). Survey data is extremely valuable in communities where more formalized data sources do not exist and where attitudes and preferences are an important part of the data collection, but does pose some risk. Because surveys rely on self- reporting by individuals, rather than on observed behavior by researchers, the validity is affected by the accuracy of respondents' memory and knowledge as well as their forthrightness in answering questions (Mertens). Issues that might be particularly exaggerated in poor communities would be distortion in responses due to shame or fear of answering truthfully[19] and low educational attainment.

Both the Nicaraguan and Colombian evaluators used a panel survey design. Data were collected on the same households and individuals over a number of years. This allowed the collection of several observations for a large number of cases. For each country,

[19] Especially in questions related to income, employment or types of goods the family possesses.

three surveys were conducted, consisting of a baseline survey and two follow-ups. The importance of the baseline survey was twofold. First, it established the context in which the programs were being implemented. This was especially important in Colombia, as there was no detailed database previously available for the communities targeted by the program (Institute for Fiscal Studies, 2003). Second, it allowed for determination of differences between the control and treatment groups. This was again more important in the Colombian case, as will be described below. The three surveys were spread over two years in Nicaragua and three years in Colombia. The second follow-up survey was used for each in the current study; thus, the program had run for one extra year in Colombia at the time analyzed.

Survey data was collected door to door. In the poor, rural contexts in which the surveys were carried out, it is likely that door-to-door interviewing was the only option for reaching a majority of households. Within developed contexts, while it takes more resources to collect data this way, it is in any case commonly thought to produce a higher response rate than mail or telephone (Mertens, 1998). In Nicaragua, 1,764 households were interviewed, and in Colombia, 19,007 households were interviewed. Both surveys contained household-level information gathered from the household head only, as well as more detailed information separated into modules or sections for children below and individuals above the age of seven. Parents were asked to report data for children below seven, but individuals above seven responded for themselves.

In any impact evaluation, the central challenge is to identify a comparison group with similar enough characteristics to the treatment group that differences between the groups after the intervention can be attributed to the program (e.g. Duflo & Kremer, 2003). It is in the selection of treatment and control groups that the greatest difference between the data for Nicaragua and Colombia lies. For the Nicaraguan RPS, program implementation allowed for a randomized quasi-experiment, with the control and treatment populations having similar characteristics, but receiving benefits at different times. In the realm of social policy, a quasi-experiment is generally the closest one can come to a natural laboratory-like experiment. Randomization allows for greater confidence in measuring program impact as it eliminates selection bias, which is the threat that pre-treatment differences exist between the two groups (Mertens, 1998). Any ethical dilemma posed by withholding benefits from a group that needs them in order to conduct a randomized trial were overcome by the fact that constraint in monetary resources required the program to be phased in by the government. The control group consisted of households that were eligible to receive program benefits, but would receive program benefits at a later time.

In the case of *Familias en Accion*, data collection began at such a time as to preclude such clean experimentation (Institute for Fiscal Studies, 2004). In order to complete the data set, evaluators had to create counterfactuals through propensity score matching. The publicly available data set already had treatment and control groups assigned

via this method. In propensity score matching, the probability of being in the treatment group is predicted based on a number of observable characteristics. A comparison group is then created by selecting people with the same probability of being treated based on their observable characteristics. In this case, evaluators chose 50 treatment municipality sampling units from the universe of treatment municipalities. They then matched those with 50 municipalities similar to the treatment municipalities in terms of population size and quality of life that were not receiving the program.[20] According to the researchers, the most common difference between these municipalities and treatment municipalities was the lack of a bank or possession of slightly more than 100,000 inhabitants. Within the treatment households, the evaluators selected a sample for the evaluation using a stratified random sampling method, and used propensity score matching to select control households out of the control municipalities. At baseline, four types of individuals were established: the "tratamiento con pago" (treatment with pay) group, the "tratamiento sin pago" (treatment without pay) group, and the corresponding controls. The difference between treatment with pay and treatment without pay is that the former had already begun receiving subsidies before the baseline measurement was taken. All individuals in the treatment and control groups had been previously classified

[20] In a small number of cases, the evaluators groups to municipalities together to form one "primary sampling unit".." Thus, the 50 PSUs actually comprised 57 treatment municipalities and 65 control municipalities

SISBEN1.[21] The major drawback to propensity score matching, as with other econometric techniques that seek to compensate for nonrandomized samples, is the possibility that some variable is overlooked that actually does affect the dependent variable. These specification errors are found in many estimation techniques (LaLonde, 1986; Duflo & Kremer, 2003).

The major limitations of both randomized and nonrandom evaluations are sample selection bias, differential attrition rates between treatment and control groups and spillover effects between treatment and control groups that can minimize the observed impact. Since selection in Nicaragua was random, we do not expect selection bias, however it is always the possibility that even though selection is random, actual participation may not be (Duflo & Kremer, 2003). In Colombia, again, the matching technique attempted to overcome this possible bias. T-tests and chi-square tests were used for each country to determine whether and how selection might have created differences between the two groups at baseline. Differential attrition and spillover effects are discussed more in depth in the following chapters.

[21] The individuals eligible for this program were identified by the government via the central informational source for distributing benefits, SISBEN. The most impoverished group of people (the lowest 20% in terms of income and other indicators) are classified as SISBEN I.

RESEARCH QUESTIONS

1. What has been the effect of the Nicaraguan and Colombian CCT programs on schooling outcomes (enrollment, attendance, retention and expectations) for individual children?

2. What has been the effect of the Nicaraguan and Colombian CCT programs on aggregate schooling outcomes (enrollment, attendance, retention and expectations) in participant communities?

MODEL SPECIFICATION AND VARIABLE SELECTION

As described in chapter 2, conditional cash transfer programs address the demand- side constraints to education. The variables of interest were chosen to reflect these major constraints. Table 4, located at the end of the chapter, summarizes the variables most commonly used to reflect these aspects of human capital theory, as well as the variables within each data set that are most suitable for use. School achievement is ultimately of concern to the researcher, but there is no achievement test data corresponding to the survey data gathered for these programs.

Dependent Variables

The dependent variables selected to correspond with the research questions were the educational variables enrollment, absenteeism and retention. These were all identified by creators of the program as outcomes to be targeted. School expectations were also measured to determine if any attitudinal shift could be observed and attributed to the programs. Extending the range of desired schooling

would be one way in which the programs could have an effect lasting beyond the actual disbursement of funds. It is thus here considered one possible measure of the sustainability of human capital investment.

Each of these variables was captured through self-report by the children themselves. Enrollment was a simple yes or no question; absenteeism was converted to a dummy from the question, "How many days did you miss last month?" The creation of the variables for retention and schooling expectations differed slightly between Nicaragua and Colombia and is described in those chapters.

Covariates (Independent Variables)

The demand side variables in human capital theory are divided into four major parts: wealth and budget constraints, opportunity costs, returns to schooling, and parental preferences, as in the model described in chapter 2. There are also a number of individual and community characteristics that should be added as controls. In this section, the major variables are explained and descriptive statistics supplied for each. Community-level characteristics and parental preferences will be presented first, as they best paint a picture of the communities in question.

Wealth and Budget Considerations

A household's total income is an important human capital consideration, as discussed in depth in Chapter 2. Development economists have determined household consumption to be a more accurate measurement of a household's well-being than income itself

(e.g. Skoufias, 2001). While detailed consumption data was collected at the household level for each country, the method of doing so resulted in highly non-standardized responses, as described separately in each section. The most representative possible number was used for each. Per capita expenditure and log expenditure were calculated as well, the former in order to standardize comparison across differently sized families and the latter because it better meets the assumptions of regression than does standard expenditure by producing a more normal distribution of expenditure values.

The natural measure of direct cost for education is the educational expenditure variable. At the household level, educational expenditure is endogenous to enrollment; a family with children enrolled in school would obviously have a higher cost of education. The easiest solution to this is to use the community mean expenditure for families with children enrolled in school to estimate what a family would have to pay if children were enrolled (Glick & Sahn, 2006). In the regression equations, the log of the average educational expenditure in the children's communities was used.

Opportunity Cost

The major opportunity cost variables used in the model are those related to working. Work is the chief trade-off for schooling, so labor patterns among school-aged children are in turn of great interest to researchers within this field. Reduction of child labor is in itself also an important focus of researchers concerned with human rights issues.

For both of these reasons, the RPS surveyors collected information on work, the alternatives to work, and the number of hours worked. The number of hours worked and a simple work dummy were used in the various models. The children themselves responded to these questions.

Returns to Schooling

There is dialogue within the research community over how to model the returns on schooling. Technically, the expected and actual returns on schooling depend upon the labor market: the likelihood that schooling will increase one's possibility of acquiring work at higher wages. This can be modeled using the prevailing wage in the nearest urban center, assuming that in general, skilled labor tends to congregate in urban areas, or the amount that wage increases due to one year of additional schooling (Altonji, 1998). Where this is difficult to acquire, or in the case of primary schooling, returns to schooling can be modeled by the expectation to attend secondary school and/or the average distance to a secondary school (Lavy, 1996). In the RPS data set, the distance to secondary school was not available. Secondary expectations, however, was available. A dummy variable was created from the stated schooling expectations. The same was true for the Colombian data set, though in the second follow-up survey, surveyors also gathered information on expectations of wages from secondary school. The community mean distance from primary school for those who were enrolled was available in Nicaragua and was

used as a variable in the models at the community and individual levels.

Parental Preferences & Household Characteristics

The major family and community level characteristics of interest were those quantifying the number of people in the households, gender, literacy and schooling characteristics, and whether the parents were living at home (Nicaragua only). Although schooling characteristics of the community and family were included in the impact evaluation model, child literacy is considered endogenous to individual school enrollment. It was included in the sections detailing baseline characteristics, but was not included in the models for analysis. Research has shown that the educational attainment of parents, particularly of mothers, is one of the key variables influencing children's enrollment (e.g., Glick & Sahn, 2006; Boserup, 1985). To determine the overall state of schooling in the treatment and control communities, school attainment characteristics were measured for the adult population, individuals over 25. Because mothers' education level in particular has been determined to be a major factor in human capital decision-making with regard to education, a variable for mother's education was created for each child in both data sets.

The Nicaraguan data contained a question specifically geared toward determining whether each of the parents was present in the household. The Colombian data did not contain a direct question pertaining to this, but was structured to allow for easy determination of whether a male or female headed the household. The gender of any

individual child can be considered an individual level characteristic, but it must be remembered that human capital theory considers the schooling decision to belong mostly to the parents, especially at the age in question for the RPS program. Thus, it is here considered one of the parental preference variables. In general, if boys (or girls) were expected to receive greater returns on their schooling, in the form of greater wages later on, their parents would be expected to be more likely to invest in education (Alderman & Gertler, 1997). Previous research would suggest gender to have a lesser effect in the Nicaraguan and Colombian cases than in Mexico, where gender parity in rural communities has traditionally been lower.

Age was included as a control. Following tradition in modeling educational returns, a quadratic age function was used: age was included as was age-squared. Probability of school enrollment is expected to increase with age, but to show diminishing returns such that the coefficient on age is positive and that on age-squared negative (e.g. Lincove, 2006; Wolfe & Behrman, 1984).

School Quality

It was difficult to find adequate variables to represent school quality, particularly in Nicaragua. Traditional variables such as percentage of teachers certified, access to libraries and books, or even student/teacher ratio were not available. The closest alternative was a question for whether a child was in a multi-grade classroom or not. Because this only applies to enrolled children, and thus was not collected for all children, it was necessary to use an aggregate by

community. The school quality variable used in the individual regressions was the percentage of children in multi-grade classrooms in the community where each child lived. The rationale is that families living in a particular community would expect the conditions of the majority of students in that community to be the same conditions that their children would face if they were enrolled in school. It is hypothesized that a higher frequency of multi-grade classroom use would be equated with a lower quality education. The Colombian data set asked each child how many students were in his or her class. This was used as a school quality variable. The full model with specific variables chosen for the Nicaraguan and Colombian studies is presented below.

Table 4
Human capital model with specific variables for Nicaragua and Colombia

Aspect of Human Capital Theory	Description of Variable in Nicaraguan data	Description of Variable in Colombian data
Wealth and Direct Cost for education	• Ln Total family expenditures • Ln per capita Educational Expenditure (comcens level)	• Ln per capita monthly income • Ln per capita Educational Expenditure (municipal level)
Opportunity Cost	• Dummy for whether worked or not in the past week • Age • Age squared	• Dummy for whether worked or not in the past week • Age • Age squared
Returns to Schooling	• Expectation of secondary school • Community mean distance to school	• Expectation of secondary school • Expected salary for individuals with secondary education
Parental Preferences	• Mother's schooling attainment, by grade reached • Whether mother lives at	• Mother's schooling attainment, by age mother left school • Number of siblings • Gender of child

	home • Number of siblings • Gender of Child	
School quality	• Community percentage of children who study in a classroom that contains multiple grades	• Municipality average number of children in classrooms
Treatment Variable	• Whether an individual actually participated in the RPS program	• Treatment individual

For each data set, the models were run at the community level and at the individual level, using community level variables as controls. This method follows that of other major impact evaluations, specifically on the *Progresa/Oportunidades* program (Skoufias, 2001).

Table 5
Community-level human capital model with specific variables for Nicaragua and Colombia

Aspect of Human Capital Theory	Description of Variable	Description of Variable
Direct Cost	*Endogenous at community level*	*Endogenous at community level*
Opportunity Cost	• Mean number of hours worked per week • Average Age • Average of Age squared	• Mean number of hours worked per week • Average Age • Average of Age squared
Returns to Schooling	• Community mean distance to school	• Mean secondary expectations
Parental Preferences	• Mean mother's schooling attainment, by "grade reached" • Percentage of mothers who live at home • Mean number of persons in the household • Ln Mean Total family expenditures	• Age mother left school • Number of siblings • Ln per capita monthly income
School quality	• Community percentage of children who study in a classroom that contains multiple grades	• Municipality average number of children in classrooms

EMPIRICAL STRATEGY

Descriptive statistics were first taken at the community level for each of the dependent and independent variables before the start of the program. For each data set, the statistics were run for the entire sample, done for the adult population (over 25), then for the children in the target age group.

In order to answer the major research questions, linear and logistic regression were used with the variables already described, but including the treatment variable as a measure of program impact at the beginning and end of the observation. There has been criticism in the past of program evaluations that only observe the end of a program, measuring the difference in groups at the end of an intervention and concluding that the program met its goals if a significant difference is measured. This ignores: 1.) differences that may have been in place at the start of the intervention as well as 2.) differences that might have occurred in both groups that could not be attributed to the program. Using regressions at the beginning and end of the program, it is easier to show the impact that the program had on the desired outcomes. Specifically, if there is no statistical difference between the participant and control samples at the beginning of the program[22], but there is at the end, we can assume that the program is the reason for the effect.

[22] Assuming that adequate measures have been taken to overcome selection bias.

At the individual level, enrollment took the form of a dummy encoded "0" for those who were not enrolled and "1" for those who were. The logistic regression (logit) function takes the form:

$$\text{Logit}(p) = \ln(p/(1-p)) = \beta X + \beta Y + \beta Z \quad (1)$$

where for this case X is a vector of child characteristics, Y is a vector of parental preferences and family characteristics, and Z represents the variable for program participation. Results can be reported either using a log-odds ratio, which compares probability that an event will occur to the probability that the event will not occur, or predicted probabilities, which predicts the effect of any given coefficient on the probability that y will occur.

In the logit model, beta coefficients can be converted into slopes, which give the marginal effects of each independent variable on the dependent variable: in this case on the probability of enrollment, absence from school, retention, or the expectation to attend secondary school.

$$\text{Prob}(\text{enroll}=1) = e^{\text{beta}}/(1+ e^{\text{beta}}) \quad (2)$$

The coefficients, log-odds ratios, and predicted probabilities are all presented for the models in the analysis.

At the community level, the aggregated outcome variables represented the percentage of children meeting each condition within

each community, or the average level for the others. Thus, the outcome variables were continuous and required the use of linear regression to test the effects. The standard OLS regression is specified as:

$$y = \alpha + \beta x + \beta x\ldots + \beta xi + \varepsilon \qquad (3)$$

where the coefficient (β) represents the effect that a one-unit change in any given variable (x) will have on the outcome variable.

Increasing robustness of the models

Unobserved similarities between households and individuals in the same municipality have the potential to lead to substantial bias in standard error if not accounted for (e.g. Skoufias, 2001). In order to report the smallest possible standard error for each regression, the models were run in Stata using robust estimation of standard error and clustering at the community level.

CHAPTER 4: COUNTRY CONTEXTS AND PROGRAM DESIGN

The application of the conditional cash transfer model to Nicaragua and Colombia allows for a case study of the possible constraints, the modifications that might need to be made in order to replicate such a program in very different settings, and the expected gains from implementing the program in such contexts. This research contributes to the literature on conditional cash transfer program implementations in several ways: 1.) compared to the Mexican and Brazilian programs, the Nicaraguan and Colombian programs have been studied less extensively; 2.) most research and discussion of CCTs takes place in the economic literature, which often fails to include consideration of the social and political factors that have contributed to the poverty of the people; 3.) CCTs are not as well known to educational researchers. By focusing more on the educational context and constraints, as well as by focusing more in-depth on the educational outcomes of the program, it is hoped to widen the audience for consideration of such comprehensive programs; and 4.) in taking a comparative perspective, this research examines more fully how the historical, political and social contexts interact with program design to yield results.

The following section supplies some historical context from which to understand the countries addressed by these programs, as well as a discussion of educational and social policy. This is followed by a discussion of the overall poverty demographics in Nicaragua and

Colombia at the time of the programs' implementation. The chapter concludes with an explanation of the RPS and *Familias en Acción* programs. A detailed table comparing the programs to *Progresa* is found in Appendix 5.

COUNTRY CONTEXTS

History, Poverty and Educational Policy in Nicaragua

The country of Nicaragua provides a unique context for the application of anti-poverty programming in general and the conditional cash transfer idea in specific. Unlike Mexico and Colombia, Nicaragua is classified by the World Bank and the CIA as a low-income country. It is, in fact, the poorest country in Central America and one of the poorest in the Latin America/Caribbean region, second only to Haiti (e.g. US State Department, 2008; World Bank, 2009). A continued reliance on agriculture and a string of political and natural events in the modern era have wreaked havoc on the economy of the country. Civil war and greed by entrenched governmental interests and often self-serving United States intervention have also combined to make economic stability impossible in the nation. Despite these constraints, the Nicaraguan government, in concert with international lending institutions has put in place various means for attempting to aid the most extremely impoverished and for improving conditions for all of the poor. Prior to implementation in Nicaragua, cash transfers had not been applied to low-income contexts, as they require a fair amount of infrastructure and coordination to carry out.

Like many other Latin American countries, Nicaragua has had a long history of political turmoil, because of both homegrown leadership and the results of imperialist or protectionist actions by the greater international powers of the world. These years of instability and conflict have had an impact on Nicaraguan social provision, including education. In its nature a means for passing on ideals and values and shaping national sentiment, education has been an important indicator of each administration's priorities. As a result, consistent with the radical shifts in political ideology, Nicaraguan educational policy has changed dramatically over the past few decades.

Beginning in the 1930s, American influence was exerted largely through the backing and protection of the pro-capitalist leadership regime of the Somoza family (e.g. Burgerman, 2006), which came into power with the help of the United States. In an effort to end rule by renegade armies, the United States created the Nicaraguan National Guard to maintain order after its withdrawal from the country in 1933. The first Somoza, Anastasio Somoza Garcia, was put in charge of the Guard and became president in 1936. Protected by the U.S.-supported Guard, the Somoza clan governed Nicaragua for four decades, to the benefit of a small elite of businessmen and landowners and with large disregard for the poor and rural inhabitants of the nation (Arnove, 1986). Various presidents from both major U.S. political parties supported the regime.

The Constitution of 1950 established the basis for educational provision in Nicaragua, including the obligation to attend primary school and the ideal of free education at the primary and secondary levels (Waggoner & Waggoner, 1971). As in other Latin American countries, the constitutional provision of education has occurred in a highly centralized manner via a Ministry of Public Education. This centrality has allowed the government to play an extremely heavy role in the content and implementation of educational policy.

Throughout the 1950s and 1960s, relative growth in the economy, coupled with the provisions in the Constitution, allowed for rapid growth in schooling (Arnove, 1986) and a decrease in illiteracy from 63 to 48 percent by 1971. An economic downturn in the 1970s, however, saw a reversal of these gains, further exacerbated by the Somozas' preference against mass education. In 1976, rural illiteracy reached over 75%, with only 6% of rural students reaching the sixth grade and only 34% completion in urban areas. The United States during this era played a role in Nicaraguan education, supplying textbooks (in conjunction with USAID-OAS) and shaping policy in the areas of curriculum development, teacher training and educational planning (Arnove, 1986). However, education was viewed as a means for advancing the elite rather than as a benefit to be shared by all (Arnove). As a result, the poor remained undereducated; the primary school attendance rate remained abysmal; and the government spending directed toward education was largely focused on the postsecondary level. Under the last leader of the Somoza regime,

Anastasio Somoza Debayle and the National Guard which he controlled, youths were considered *de facto* public enemies (Arnove, 1986), to be ignored if not actively persecuted.

A student, Carlos Fonesca, founded the Sandinista National Liberation Front (FSLN) in 1961. Originally insignificant as a political movement, it grew in power through the 1960s as the chief opposition party to Somoza. Named for Sandino, considered one of the earliest martyrs in the cause of liberation, the opposition movement swept peasantry and the urban middle class together. As abuses of power became more blatant, United States backing flagged, but the government attempted to negotiate a peaceful abdication of Somoza rule. Ultimately, however, in the face of mounting violent opposition, the US finally withdrew all support from the dictator. A Sandinista military junta took power of Nicaragua in 1979.

The dependence on foreign aid and the mismanagement and corruption of government had led to an astounding underdevelopment of the Nicaraguan economy at the time of its take-over by Daniel Ortega and the Sandinistas. The major goals of the Sandinista ("revolutionary") government were initially to move the economy toward socialism, to improve the lives of the poor, to build a participatory democracy and to integrate portions of the populace previously alienated from the political system (Booth et al., 2006). To this end, the government promoted grassroots organization of women, peasants and young people in conjunction with sweeping reforms in health and education.

Within the revolutionary government, education became a priority on a much greater scale than previously: the focus of education shifted to include and uplift the peasant and working classes of Nicaragua. According to Arnove & Torres (1995), the development orientation of the FSLN included the redistribution of power and wealth and an expansion of citizen participation. To support this program, the major principles of Sandinista educational policy were:

> 1.) The emergence of the great majority of the people formerly dispossessed and socially excluded, as the active protagonists of their own education.
>
> 2.) The elimination of illiteracy and the introduction of adult education as priority tasks of the revolution.
>
> 3.) The linking of the educational process with creative and productive work as an educational principle, leading to educational innovation and promoting the scientific and technical fields.
>
> 4.) The transformation and realignment of the education system as a whole, to bring it into line with the new economic and social model. (Arnove & Torres, p. 319)

One of the first and greatest initiatives of the Sandinistas was a large-scale literacy campaign. Thousands of *brigadistas,* middle-class adolescents from the urban areas, were sent to rural regions of the country to serve as volunteer literacy instructors. The campaign employed for the first time students and women in the service of their country (Arnove, 1986; Booth et al, 2006). Through this effort, great

strides were made, with estimates for literacy rising from less than 50% to around 87% by the mid-80s (Booth et al.). The education received through the literacy campaigns, however, was in many cases not neutral: much of the material used was designed to support the ideals of the revolution, either directly or indirectly. The literacy campaign was a political tool first and an educational program second. The desired pedagogy stressed the importance of increasing empowerment of the learners and the importance of community (Arnove, 1986). Some of the material was more overt propaganda designed to promote loyalty to the administration. Lessons were couched in the terminology of rebellion toward "imperialist" powers and empowerment of the *campesino*. Many textbooks were donated by Cuba (Arnove & Torres, 1995; Burgerman, 2006).

In addition to the literacy campaign, the revolutionary government increased access to schooling more generally. During the first half of the Sandinista administration, over 1,000 primary schools and 48 secondary schools were built, and technical and agricultural education facilities were built in rural and coastal areas of the country (Arnove, 1986). Following the literacy crusade, the Sandinista government embarked upon an adult education program to counter the effects of years of educational neglect (Sandiford et al, 1994; Arnove).

The expansion of the system did put a strain on educational resources and led to some distortions. For instance, most students who had never attended school entered the first grade, leading to a

distribution in which almost half of all primary students were in the 1st grade, and students three to four years older than the expected age could be found enrolled in any particular grade (Arnove, 1986). In addition to the influx of students, a shortcoming of the literacy campaign's "mass" nature was the minimal preparation of many of the teachers. Because the educational level of the populace was already so low, it was difficult to recruit teachers who had themselves even completed the sixth grade. According to some reports from the period, as many as 70% of the teachers employed in the campaign had not completed that level of schooling (Arnove).

Despite internal challenges, the great majority of pressure on the educational system came from political turmoil rooted in local and external sources. With the beginning of the Reagan administration (1981), the United States openly opposed the Sandinista government that had overthrown Somoza. Reagan ran upon and pursued a platform of ardent anti-communism. The revolutionary and socialist tenor of the Sandinista government, as evidenced not least of all in the National Literacy Campaign, posed a seemingly communist threat that was intolerable to the Reagan regime. Considering American values to be directly in conflict with the ideals and practices of the FSLN government, the United States organized and participated in warfare against the Nicaraguan government, acting through the Nicaraguan contra-revolutionaries, or Contras beginning in 1981. The United States also imposed economic sanctions in 1985 and convinced multilateral institutions to withdraw aid. Though by most accounts

truly believing in the *campesino*'s need and right to be served by government, the Sandinista government essentially imposed a dictatorship of its own, albeit a socialist one (Burgerman, 2006). Those more moderate elements of the revolutionary cause, who had fought for nationalistic reasons (self-rule, freedom of press and commerce) and sought greater pluralism as a necessary component of a "free Nicaragua" chafed under the one-party dominance of the Sandinistas (e.g. Chamorro, 1996). Meanwhile, the economic situation of the majority of people did not improve.

In order to fight the Contra War, Nicaragua was forced to redirect funds for social programs, including education, to the defense budget, thus stalling outright any further gains in education throughout the duration of the war and into the 1990s. Though less often noted in the literature, it is also the case that the war itself was fought predominantly in the rural highlands, areas that already were some of the poorest and least educated in Nicaragua (Booth et al., 2006). This led to great damage to infrastructure and crops and thus the entire economy of the region. Those considered to be on the front lines of Sandinista social reform were often targeted: teachers and health workers were assassinated (Arnove, 1986). Against this backdrop, and partially for these reasons, the literacy gains made during the crusade were not long-lasting (Sandiford, 1994).

Despite the pressures from the United States and many of the other Central American countries, Sandinista Nicaragua received aid and support from more markedly communist regimes, particularly

from Cuba and the Soviet Union. Hundreds of Cuban doctors, nurses and teachers provided services, even in places that Nicaraguan doctors tended not to service. The Soviet Union provided aid money. As long as these allies remained, the Sandinistas were able to maintain their fight against the United States and the contras. Ultimately, however, faced with its own internal turmoil, the Soviet Union withdrew economic support from Nicaragua, effectively completing the alienation of the country.

Partially as a result of external pressures, the declining worldwide economy, and the difficulties of economic governance in the socialist state (Booth et al., 2006), during the latter years of Sandinista rule, social spending stagnated, leading to disruption in medical care, sanitation service and school funding. As the populace increased its criticism of the government, the administration turned increasingly to repressive measures similar though less severe to those experienced under Somoza. While repression of government critics remained much less violent than in Guatemala and El Salvador, [it] included intimidation, harassment, and illegal detention of opponents, independent union leaders, and human rights workers; press censorship; curtailment of labor union activity; and poor prison conditions. (Booth et al, 2006, p. 84)

Toward the end of the 1980s, in response to hyperinflation caused largely by the need to fund the war, the government began to impose structural reforms that further intensified the economic woes of the populace (Booth et al., 2006). Although similar to the reforms

beginning to be enacted in other Latin American countries, the Nicaraguan reforms differed in that they did not receive the aid of multilateral institutions, since they had been cut off from these institutions in response to those reforms (Booth et al.), thus making the impact even more severe.

In response to growing pressure and yet confident of victory, the FSLN arranged for democratic elections in the late-1980s. The United States interceded and provided funds to help unite the dissident groups opposing Sandinista control into a coalition. This National Opposition Union (UNO) prevailed in the election and Ortega passed the presidency to Violeta Barrios de Chamorro, widow of Pedro Joaquin Chamorro, the editor and owner of the famous newspaper *La Prensa* and vocal opponent of the Somoza clan until his murder in 1978. The Chamorros were widely regarded in Nicaragua as nationalistic, patriotic and devoted to economic liberalism and political pluralism.

The 1990 election of Violeta Chamorro is considered by most to have been the first definitive act of true democracy in Nicaragua (e.g. Booth et al., 2006). The outcome reopened the lines of trade and international assistance between Nicaragua and the United States. At the start of the Chamorro administration, the net primary enrollment rate was 72% for males and 74% for females. However, it had not translated into grade completion, as indicated by the data and corroborated by various sources (e.g. Arnove & Torres, 1995); the progression to grade 5 was only 11% for males and 37% for females. This fact as well as the fact that primary completion for females was 3

times that for males, lends strong evidence to the human capital focus on opportunity cost in the form of work. Schooling remained unattainable for the majority of Nicaraguans in 1990.

The Chamorro government and the subsequent administration held values more similar to the pro-democratic, pro-capitalist views of the developed countries. As in other Latin American countries of the 1990s, the aid institutions in concert with the new administration increased the pace of structural adjustment reforms begun under Ortega to shore up the nation's ruined finances. In order to qualify for debt relief, Chamorro had to impose far greater fiscal discipline upon the economy than had been previously applied. Among other changes, the administration dramatically cut back spending on social programs. While this period allowed Nicaragua to decrease somewhat its foreign debt burden, bring inflation under control and to increase overall productivity, it also led to greater inequality and unemployment. The administration also used the educational system to replace some of the previous administration's ideals with more liberal/capitalist ideals. Sandinista textbooks were replaced with new books financed and approved by the United States (Booth et al., 2006).

Ortega was reelected in 2006, in no small way reflecting the inability of preceding administrations to fully satisfy the needs of the populace, and remains as of 2008 the president of Nicaragua. The administration has rolled back some of the most neoliberal reforms of the preceding administrations, continuing the cycle of relentless reform that has existed in Nicaragua for decades. While Nicaragua has

emerged with far lesser violence in modernity, as a result of its historical legacy, the country entered the 21st century lagging behind most of its Latin American counterparts in many areas. The Contra War affected the infrastructure and production of Nicaragua far more than did similar civil disturbances in Guatemala or El Salvador (Burgerman, 2006). So while the Nicaragua of today is more peaceful than the other countries that have shared its revolutionary past (Burgerman), it remains extremely poor, especially in the rural areas. Those regions reliant on coffee farming remain particularly vulnerable to price fluctuations in that staple crop, as well as to natural disasters such as the major worldwide drop in coffee prices that occurred in 2001, concurrent with the RPS program.

History, Politics and Educational Policy in Colombia

Colombia, the fourth-largest country in South America, is the second largest in terms of population after Brazil, with 45 million people in 2007 (Kline and Gray, 2007). Based on GNP per capita, in 1997 Colombia was considered a lower -middle-income country by international standards (World Bank, 2002). In possession of startling geographic and ethnic diversity, Colombia is one of the Latin American countries with the longest tradition of civilian democratic government (Kline and Gray), but has also experienced a legacy of violence that continues into the present.

In 1819, Colombia won independence from Spain and formed a partnership with modern-day Venezuela, Ecuador and Panama, called *Gran Colombia*. This crumbled in 1830, with the exit of Venezuela and

Ecuador. The Constitution of 1886, though in name a democratic constitution, actually concentrated power in the hands of the Catholic Church and the two major parties (Hanson, 1995), Conservative and Liberal, formed in 1843 and 1848 respectively. Colombia's history of conflict began between the parties themselves. Although both parties were organized around elite interests and had a common ideology with regard to the social order, the network of relationships and appointments differed for each (Kline and Gray, 2007). Thus, any shift in party power resulted in an equally dramatic shift in social and economic power. This created an intense degree of competition between the parties, leading to several civil wars led by party elites but fought by mobilized peasants (*campesinos*). This system greatly politicized and divided the masses, and perpetuated a psychology in which the greatest perceived differences were along party lines rather than along class lines. It was also extremely centralized, with leaders at the local and departmental levels all appointed by the president. As in Nicaragua, the reserved power of the president to rule absolutely in times of national emergency or "state of siege" was at times abused for the consolidation of power (Hanson).

The two parties participated in several civil wars, the most significant and famous of which was known as the Thousand Days civil war, from 1899 to 1902. Another great interparty conflict, known as *La Violencia*, occurred between the late 1940s and early 1950s in large part a result of the assassination of the liberal presidential candidate in 1948. Conservatives rushed to consolidate the majority, and

conservative-supporting *campesinos* began to seize lands that had been previously taken from them by liberals. The civil war, which greatly surpassed all previous wars (Kline and Gray, 2007) continued for the next 20 years and claimed the lives of over 200,000 Colombians.

The major thrust of organized violence came to an end with Colombia's first and only military dictatorship of the 20th century. Most members of the two major parties united in support of Gustavo Rojas Pinilla in 1953. Pinilla was able to pacify certain elements of the citizenry, but unable to really control the radicalized peasantry or create solid governance for the majority of the country. Furthermore, Rojas began to move increasingly toward repressive dictatorship to appear desirous of remaining in power beyond the usual four-year term.

The leaders of the Conservative and Liberal parties came together to oust Rojas and put in place a unique bipartisan governing coalition to manage the country for the next 16 years. This political compromise, known as the National Front, stipulated an alternating presidency between the two parties every four years, and a 50-50 split among party members in all other parts of the government. During the 16-year period, no other political parties would be allowed to participate in elections. The agreement also established a merit-based bureaucracy to replace the one based solely on patronage that had existed up to that point. Although this arrangement put an end to the bloody bickering between the two major parties, the structure

introduced several political inefficiencies that would prove to have serious consequences. The alternating structure of the presidency as well as the perpetually divided national Congress made it very difficult for any particular administration to implement significant changes, including improvements in infrastructure and welfare for many of Colombia's people. The ban on new political parties prevented many groups from having a voice in the government (Kline and Gray, 2007). The dismal conditions for many of Colombia's people, the inability to effect change through government and the ineffectiveness of the government in asserting control over public welfare created the opportunity for alternative means of exercising power to emerge in local areas, such as the clientelism so common in Latin America and also prevalent in Nicaraguan political history, in which favors are exchanged for political support, rather than dispensed by the state for the public good (DeFerranti et al, 2004).

When the National Front came into power, the educational system of Colombia was in an abysmal state. Literacy was approximately 57%, and only half of the primary school-aged population was in school (National Department of planning, as cited in Hanson, 1995). Although spending on education improved from about 1.5% to 3.5% under the National Front, the governing class did nothing to improve economic disparities between rich and poor. In the late 1960s, although the central government technically oversaw education, each departmental governor selected its own Secretary of Education. This meant that the central Ministry of Education had little

control over day-to-day planning. Teacher salaries, paid by the Ministry but funneled through the regional offices, were often hijacked for other purposes, so teachers often did not receive salaries on time and resorted to disruptive strikes (Hanson).

To address some of these issues, 1968 saw the beginning of a massive educational reform- centralization of the educational system to ensure that all regional offices conformed to national policy (Hanson, 1995). Because of these reforms, by 1980 the educational system had shown some vast improvement in combating blatant corruption: teacher salaries were paid appropriately, qualified teachers were being hired. Yet in terms of educational outcomes, Colombia continued to trail several other South American countries, with only 57% of children completing primary school within the usual amount of time and a 46% secondary school attendance rate. Colombia also trailed the Latin American average in terms of educational spending as a percentage of GNP (Hanson, 1995). Furthermore, the consolidation of control at the central level led to greater neglect in many areas of the country.

The populace grew increasingly frustrated with the government through the 1970s and early 1980s. Scholars have attributed the rise of organized narcotic trading, guerrilla warfare, and paramilitary activity to the disordered state of the government: as the masses grew more unruly, the ruling class was unable to keep control over them, but did not face this fact and change accordingly (Hanson, 1995). Colombia began a descent into violence nearly unparalleled in

its legacy. According to Hanson, between 1988 and 1991, over 2,000 political assassinations occurred; three political candidates were in fact assassinated within the same presidential election. Policemen and newspaper reporters faced a similar fate in the city of Medellín, the site of greatest activity for the drug trade. Within the educational arena, university students, school principals and officials were also targets of violence (Hanson).

Government-wide, it was in response to this deepening chaos that the government finally embarked upon a program of change, this time in the form of decentralization. The year 1988 saw the popular election of over 1,000 mayors as well as the governors for all of the departments. The government's four-year development plan, created in 1990, highlighted the need for still greater improvements in primary and secondary education and a still underdeveloped participatory democracy. A constitutional assembly was convened in 1991, resulting in a new Constitution that emphasized an expansion of democracy. This was considered necessary to quell violence by integrating political dissidents.

This enhanced democratic philosophy applied to the educational system. The drafters of the Constitution in fact considered education essential to the creation of the new Colombian order (Hanson, 1995). Following the government-wide program to reverse the trend of centralization, the Ministry of Education was reorganized and decision-making more localized, relegated to the level of the municipality. At the start, 85% of educational financing came from the national

government; the educational reform required more co financing from municipal governments. National spending was frozen, so that any additional spending would have to come from the municipalities (Hanson). However, many municipalities, including wealthy ones, refused to take responsibility for schools because the facilities were in such poor condition and severely understaffed in many cases.

Since the end of the National Front, much of Colombia's political activity has focused on addressing the problems of guerrilla warfare and drug trafficking. Several administrations have attempted to eradicate drug cartels, using various strategies from the 'hard-line repressive approach' of President Turbay, supported by Ronald Reagan, to a peace program involving the laying down of arms and the granting of political voice (Betancour, 2008). The largest and most famous of guerrilla forces are the Fuerzas Armadas Revolucionarias de Colombia (FARC) and the ELN, both of which have roots in Marxist ideology. The years 1986 to 1990 were especially violent, with three types of irregular armed actors (Betancour, 2008) strengthening during the period: drug traffickers, guerrillas, and paramilitary units established ostensibly to protect against the other two. As the military strength of the guerrilla forces have grown and ebbed, the United States and other nations have provided and withdrawn economic investment in the country according to their comfort level with the stability of the nation. Currently, the liberal and conservative parties remain the largest, but in 2007, there were over 74 other political parties. Outside the parties, but still powerful in the political sphere

are some labor unions, notably the National Association of Industrialists and the National Foundation of Coffee Growers (Betancour, 2008).

One major impact of Colombia's political history is that in general, the government has been unable to implement policies to improve the welfare of the poor (Kline and Gray, 2007). Despite assertions of presidents since at least the 1980s that their administrations would resolve issues of poverty, little progress has been made. In fact, despite the fact that Colombia is considered one of the most liberal democracies in Latin America, it has neglected its poorest citizens more than many other countries in the region (Kline and Gray). Ironically, as the domestic instability has impeded governmental progress, it is the poverty itself that in many cases has spurred Colombians to a life of crime.

The current president, Alvaro Uribe, was elected in 2002 and reelected in 2006. With the backing of the United States, Uribe has taken an aggressive approach to combating guerrilla forces and strengthening the national military rather than supporting paramilitary activity (US Department of State, 2009). Reduction in violence has allowed for a cautious growth in tourist activity. The Uribe years have also witnessed a rise in economic productivity. He considers himself and is considered further to the right than previous Colombian presidents and is currently considered by some to be the United States biggest ally in Latin America (*Business Week*, 2007). Uribe's stance on crime as and success in courting foreign investment has won him

support both in his country and outside, but some as being linked with paramilitary organizations criticize him. Despite accusations, Uribe has enjoyed 60 to 70% approval ratings during most of his time in office (*Business Week*, 2007). However, conditions of a majority of Colombians remain difficult (Kline and Gray, 2007).

The introduction of mayoral elections and electoral competition has introduced opportunity for new groups. The entrepreneurial class in particular has pushed for changes that engender political stability by providing broader social services rather than relying on previous client list practices (DeFerranti et al., 2004). Although many researchers believe that radical social and educational reform will not take place in Colombia because a real redistribution of educational opportunities would work against the interests of the most powerful groups (Berry, 1983, as cited in Patrinos), the implementation of the conditional cash transfer program discussed in this paper at least demonstrates a recognition that those who have long been left out of the educational system should have greater opportunities for inclusion.

Summary of major historical themes in Nicaragua and Colombia

Nicaragua and Colombia are very different in their progression toward the modern era, as well as in the overall current position of their economies. A very important thing that they share, however, is the existence of a large population of individuals with far fewer educational opportunities than others in the country. Nicaragua's history has been characterized by instability and dictatorial rule, punctuated by a few administrations of political moderation. Poverty

has plagued the nation; neglected by some in power, and aided by others, but always in the context of very low overall resources, the poor have continued to suffer limited gains. As the country has swung between capitalist and socialist administrations, it has been subject to a great deal of intervention by the United States, which has favored business but not always to the benefit of all Nicaraguans. Colombia's political history is characterized by a more stable economic order, but domination via the political elite has prevented the benefits from reaching the majority of Colombians. The neglect of broad social development and order under both centralized and decentralized schemes of government have led to the high incidence of drugs, violence and intimidation that Colombia is perhaps best known for. Despite an understandable preoccupation with quelling violence, the last two administrations in Colombia have made an effort to focus on improving the conditions of the poor.

DEMOGRAPHICS AND PROGRAM SPECIFICS: NICARAGUA

In 2001, the Nicaraguan government in conjunction with the World Bank undertook a comprehensive evaluation of poverty in order to advise anti-poverty efforts in the 21st century. At the time of that report, which was published during the pilot phase of the RPS program, about 50% of the population remained in poverty with about 17% classified as extremely impoverished. There had been gains in provision of social service throughout the Sandinista and Chamorro years, yet the poor tended to regard the 1990s as an era in which their welfare actually decreased (World Bank, 2001). In Nicaragua,

this may have been more pronounced than in other nations since the country was not only facing macroeconomic reform but also the transition from a socialist to a capitalist state. Under the Sandinistas, despite the rapid decline in the overall economy, improvements had been made in social indicators arising because of increased social spending (e.g. World Bank). Once the administration changed, while many NGOs were formed to provide assistance to those who would no longer benefit from state institutions (World Bank), there was no formal widespread safety net in place to protect the poor from the rapid changes.

There were some positive changes in demographics over the period, including in health and education. With regard to the latter, gains between 1993 and 1998 occurred mostly in rural areas. According to the 2001 Nicaraguan Household Survey, however, 19% of the population was still illiterate at that time. These numbers are not particularly high for the region; overall Nicaragua's gains against illiteracy have been laudable. However, consistent with its history, school enrollment figures have not kept up. Aside from low enrollment and school completion numbers, there are a large percentage of children in grades inappropriate for their ages. The official starting age for primary school is seven, yet one often finds 6-year olds in primary school rather than in preschool where they technically should be. On the other end of the scale, one finds many children between the ages of 13-18 still in primary school, especially in rural areas where 52% of the children in this age range remained in primary school in 2001

(United Nations, 2000). Of the regions of Nicaragua, the Atlantic is currently the poorest, having surpassed the rural highlands in 1983, with nearly 80% of its population living in poverty (deFerranti et al., 2004; United Nations). The Atlantic region is the traditional home of the remaining indigenous population, mostly Moskito Indian, and a small population of African-descendent people.

Table 6
Literacy and enrollment in Nicaragua, 2001

	% literacy[1]	% primary enrollment[2]	% secondary enrollment
Total	81%	-	-
Urban	89%	83%	74%
Rural	66%	59%	34%

Sources: 1. World Bank, 2006; 2. Arnove & Torres, 2003

Historically, and continuing into the present, Nicaragua has devoted an inordinate amount of resources to tertiary education, to the detriment of pre-school and secondary funding in particular (e.g. Porta & Laguna, 2007). In 2000, primary education made up 53% of the education spending, and university spending made up 24%, while preschool (1%) and secondary (5%) comprised much less. More tellingly, however, the per-student government expenditure was US $61 per year for primary students and $22 for each secondary school student, compared with $1,612 per each university student (World Bank, 2001). Based partially on the support for primary education by lending institutions, the country has also dedicated a large percentage of spending to the primary level. This is not in itself detrimental, but as research continues to indicate the importance of preschool education and the necessity of secondary education as a bridge to

university, which currently mostly the rich achieve, the funding scheme is branded in most analyses as highly regressive (e.g. Porta and Laguna, 2007; World Bank, 2001; United Nations, 2001). The extremely low figure for government funding for secondary school in particular means that individuals must either take on the burden for most of the cost of secondary education (for example, by enrolling in private school) or suffer a very low quality education (United Nations). In order to reduce Nicaragua's debt burden and make social expenditures at least partially revenue-generating, administrations since 1990 have implemented school fees at the primary level, which in general have accounted for approximately 15% of private direct investment in primary education, the rest being associated mostly with uniforms and books.

Table 7
Educational expenditure in Nicaragua, 2000

Level of schooling	% of total expenditure	US dollars per student
Preschool	1	-
Primary	53	6.14
Secondary	5	21.70
University	24	1611.70

Source: World Bank, 2006

On a positive note, Nicaragua has not had a problem with gender disparity in education (Porta & Lagnua, 2007). To the extent that there is a difference, it is larger in rural areas, where there is such a great need for boys to go to work that in some cases female enrollment in primary and especially secondary school actually exceeds that of male (World Bank, 2006). It is suggested that these statistics indicate a very high opportunity cost to substituting work for school in rural

Nicaragua. This led World Bank researchers in the poverty assessment to hypothesize that programs like the CCT of Mexico and Brazil might be able to affect school enrollment, but would most likely *not* be able to affect child labor.

Rural Poverty and Infrastructure

As at other phases in Nicaragua's history and Latin America as a whole, the incidence of poverty among the rural population was staggering at the end of the 1990s, with a nearly 70% poverty rate compared to a 30% rate in urban areas, as well as a greater depth of poverty[23] for the rural poor (World Bank, 2001). Access to water and sanitation facilities remains a challenge for many Nicaraguans. Among the poorest households, 95% do not have piped water inside their homes. Thus, most have to acquire water from public wells or rivers (UN, 2001). According to a demographic survey in 2001 (ENDESA, as cited in UN), almost 25% of rural Nicaraguans do not have access to potable water within a fifteen minute distance from their homes. In terms of sanitation, efforts have been made to increase the number of latrines, so as to provide at least some minimum sanitation facilities. Despite increases in the number of facilities, little evidence has shown a decrease in common illnesses such as diarrhea as a result (World Bank, 2001).

Infrastructure issues also provide a challenge to schooling. A 2001 survey suggested that about 75% of public educational facilities lacked minimum conditions for teaching (World Bank, 2006). In this

[23] Measured in terms of distance from the poverty line.

case, putting aside lack of qualified teachers and adequate teaching materials, 63% of schools lack drinking water on premises, and a full 70% lack electricity. It is in recognition of the extreme poverty, and especially the concentration of rural poverty, that the RPS program was designed.

The RPS Program

The Nicaraguan *Red de Protección Social* CCT was the first CCT to be implemented in a low-income country. Due to the need for supply-side support to the initiatives, it was initially unclear how successful the programs might be in low-income settings. However, it is also what makes it an especially important case study, as so many of the countries under consideration for dissemination are low-income (e.g. in South Asia and sub-Saharan Africa). While the International Food Policy Research Institute has already made some evaluation, the RPS has not received the same level of research attention as have *Progresa* and *Bolsa Familia*, and thus remains a fruitful area of greater research.

Past social programs in general in Nicaragua, like those of many countries, have suffered low impact for various reasons: programs lack specific goals and clear responsibilities by those in charge of them, are not targeted to the poorest and therefore more costly than they need to be, and have been implemented with no way of measuring impact (World Bank, Poverty Assessment, 2001). Lastly, the government has remained greatly reliant on external donors to fund recurrent expenditures that generally should be used to finance new projects

and projects that contribute to advancement (World Bank, 2001). The general shift towards programs that emphasize long-term goals rather than short-term poverty relief reflects a broader change in the approach to social policy in the region (Graham, 2000). RPS was a step in that direction.

It is important to acknowledge the major shift in political philosophy required for the Nicaraguan government to embrace a program constructed around a human capital framework. Critics place conditional cash transfer programs in the same category as other neoliberal reforms. Though it should be conceded that the RPS allowed a level of participatory democracy in implementation, the adherence to a market based solution would have been and ultimately was anathema to a more socialist administration.

Program Components: Benefits and Requirements

The RPS was funded in part by the InterAmerican Development Bank (Maluccio and Flores, 2005; Dammert, 2008). As a stipulation for receiving funding, the Bank required an externally evaluated pilot program to ensure the program's efficiency. The pilot program, evaluated by IFPRI, began in 2000, with a focus on rural areas, the areas of greatest poverty concentration.[24] The Government of Nicaragua selected two departments out of the 17 to participate in the pilot, both of which showed increasing poverty over the years prior: *Madriz* and *Matagalpa*. Despite high poverty, these departments were

[24] In 1998, of the 48% of Nicaragua classified as poor, 75% of these lived in rural areas (IFPRI, 2005).

chosen for infrastructural advantages that rendered them most suitable for a pilot study: relatively close proximity to the capital of Managua, a decent supply of schools and health facilities, and good local institutional capacity, including a banking system. Although it could be said that these conditions limit the intervention from reaching the poorest, it did allow the CCT to function more fully as a demand-side program, and to be evaluated solely as such. More importantly, given the overall lack of capacity, it provided a possibility for success without the redistribution of more of the government's scarce resources.

The major stated goals of the RPS were to supplement household income, reduce school dropout during the first four years of primary school, and to increase the health and nutrition of children under 5. Toward this end, benefits were organized around two major areas: food, nutrition and health on the one hand, and education on the other. The benefits were tied to these, with families receiving food transfers tied to health-related behaviors and educational benefits tied to education-related behaviors.

In 2000, the amount of the food transfer was a flat $224/year, received bimonthly, not contingent upon the size of the family. In order to receive this stipend, families were required to 1.) attend workshops on health and nutrition and 2.) maintain monthly (for children under two years of age) or bimonthly (for children between 2 and 5) clinic visits for growth and development monitoring and other

preventive care. In addition to the visits, mothers received individual counseling directed toward their specific children.

In terms of education, there were two separate transfers, one called "*bona escolar*" tied to enrollment, and given to children ages 7-13 up to the fourth grade[25] (IFPRI, 2005; Regalia & Castro, 2007). This was a US$11 bimonthly sum paid for 10 months out of the year, which unlike in the other programs, was fixed per family rather than increasing with the number of children enrolled; if one child did not go to school, the entire stipend was theoretically withheld. This factor might be expected to produce different effects than would the tying of transfers to each child. This award structure also differs from that of the Mexican, Brazilian, and Colombian programs in the ages and grades it targets; it is far more limited than its predecessors. However, given the extremely low educational attainment of the Nicaraguan population at the start of the program compared to the others, it was likely a necessary first step for establishing some regularity of school attendance, as well as a reasonable scope given the funds at hand.

In addition to the *bono escolar*, beneficiary families received a *mochila escolar* for school supplies of US $21, conditioned upon enrollment, for each child attending school. In the second phase of RPS, the *Mochila Escolar* was increased to $25[26] per year, while the enrollment transfer was reduced to US$9 per month (Regalia & Castro, 2007). This is sensible given the data (provided in analysis) that

[25] Regalia & Castro (2007) noted that most rural schools did not offer 5th or 6th grade at the time of implementation.
[26] This equaled the amount that the Ministry of Education was delivering to non-RPS schools in in-kind supplies (Regalia & Castro, 2007)

supplies comprise the greatest percentage of school cost. Given the human capital orientation of the program, it is important to note that since the nominal value of the transfers remained constant over both years of the pilot, the real value of the transfers declined about 8% due to inflation over that time period.

In order to receive school-related benefits, households were required to maintain 85% attendance rates and were subject to lose benefits if children did not advance from grade to grade. This latter requirement was intended largely as a disincentive to try to cheat the system by purposefully keeping children in grades 1-4 in order to continue to receive the benefit. Due to irregularities in the enforcement of the requirement, however, it was ultimately dropped (IFPRI, 2005; Dammert, 2008).

Table 8
Nicaraguan RPS eligibility and benefits, pilot phase

	Food security, health, and nutrition	Education
Eligibility	All households	All households with children ages seven through 13 who have not yet completed fourth-grade
Demand-side benefits	**Food security transfer** C$2,880 per household per year (US $224)	**School attendance transfer** C$, 1440 per household per year. (US $112) **School supplies transfer** C$75 per child beginning of school year ($21)
Supply-side benefits	• Bimonthly health education workshops • Child growth monitoring • Provision of anti-parasite, vitamins, and	**Teacher transfer** C$60 per child per year given to teacher/school ($5)

	iron supplements • Vaccinations (0-5 year olds)

Source: Maluccio, 2004

Program Administration

As with *Oportunidades,* implementing the program required coordination between the federal government and local communities, as well as all of the levels in-between. At the local level, as in Mexico, community-elected women called *promotoras* provided information to the participants and worked in conjunction with RPS representatives. At the municipal level, committees of central government and RPS personnel coordinated supply-side issues to support RPS. This was an especially important function given the increased demand created by the program.

As far as the specifics of fund distribution, for each household, a particular individual was identified as the representative and only this person could collect the transfer. Mothers were favored, with the result that 95% of the designees were women (IFPRI, 2005). The method of distributing funds was extremely efficient (IFPRI), paid bimonthly by payment agencies located in each municipality. Beneficiaries received a photo identification card with a bar code to be used at payment stations, and were given at each visit a receipt detailing the transfers to be expected during the following period. Non-compliance would result in reduction of transfers received, and generally, the municipal committees (and/or promotoras) would explain why funds were to be deducted. If funds were deducted in error, they could be refunded in

the next month's disbursement. All transfers were paid in Nicaraguan *córdobas*.

Monitoring of compliance was accomplished through a Management Information System (MIS) designed specifically for use by the RPS. Like Colombia's SISBEN, MIS was used for targeting. However, the system also coordinated health-care providers, schools, requests to the Ministry of Health and could track the fulfillment of duties by service providers.

Chief Differences/Innovations

There are several major differences between the contexts in which Brazil and Mexico's programs were implemented and that of Nicaragua. The most relevant and most noted is the greater degree of overall poverty in the country. As noted, Nicaragua has suffered historically low income, low growth, poor resistance to natural and economic disasters, a high debt burden, and an unstable relationship with major world donors. Unlike Mexico and Brazil, poverty is not identified with any particular ethnicity more than others, and unlike Mexico, Nicaragua does not have a high percentage of purely indigenous people. Due to the poverty, relative government instability and extreme lack of infrastructure in parts of Nicaragua at the time of implementation, the investment that could be made in RPS had to be carefully considered. Toward this end, several innovations were introduced into the RPS that had not been included in previous programs. These innovations were mostly in overall governance and

administration of the program, as well as in the health component of the program.

The most innovative adaptation was the use of private providers for the health portion of the program (IFPRI, 2005). This innovation came about as an utterly pragmatic solution to the lack of capacity on the part of the Nicaraguan Ministry of Health to expand services to meet the anticipated increased demand. Private provision of educational services was not as much needed, as the supply of schools greatly exceeded that of health facilities (United Nations, 2001). A competitive bidding process was used to select for-profit firms and non-governmental organizations to provide health care to the most remote areas of the country. The selected providers were monitored for performance and remunerated based on that performance (Regalia & Castro, 2007). In doing this, the RPS became the first CCT to fully utilize a public-private partnership to deliver widespread social assistance.

Also particular to RPS, the teacher and school received a small bonus, to partially remunerate for additional reporting time and cost to the school due to increased attendance. This stipend was received by the family and delivered to the school by the child. Its receipt was monitored and tracked.

Review of the studies already done on RPS

Although not a lot of research has been conducted on the Nicaraguan RPS program, there has been some, related largely to changes in consumption because of the program. The most extensive

research has been done by John Maluccio of IFPRI, who wrote the preliminary impact evaluation for the program. The evaluation focused on the mean treatment effect on a range of household outcome variables. Maluccio and Flores (2004) found that RPS had a positive impact especially for the very poor on household expenditures, including the proportion devoted to food; a significant increase in enrollment and attendance; and positive effects on children's health care, nutritional status and vaccination rates. Although extensive and covering many of the key outcomes associated with the program, the impact evaluation did not utilize a model containing significant controls for variables. It has been left to subsequent research to take up more specific aspects of program impact.

Adato and Roopnaraine (2004) performed an analysis similar to that described in the literature review by Adato around the social impacts of *Progresa.* The findings were similar to those in Mexico as well. Although with the RPS the targeted level was the community rather than the household, there were still some households within treatment communities that did not receive treatment. The selection of communities and households for inclusion in the program was not well explained to participants. Individuals who were interviewed expressed confusion, and in some cases a sense of injustice that some community members were included and some were not included in the program. Similarly to Mexico, program participants knew that there was a way for reporting issues or complaints, but in many cases did not know the exact procedure for doing so.

Dammert (2008) has purported to go beyond the treatment of mean impact of the program to measure heterogeneous impacts of the various kinds of transfers on expenditure distribution. She included a model to estimate the conditions of the individual households at the start of the program based on such factors as income, ages of the people in the family, enrollment and health patterns within the family. Dammert found evidence that there is a large degree of heterogeneity in the impacts of the program depending on the level of poverty experienced by the households.

Lastly, in an interesting innovation in use of the RPS data set, Maluccio (2004) tested the extent to which the RPS program had been used as a coping strategy during a coffee crisis that occurred during its implementation. He looked at households in coffee-growing communities severely affected by the worldwide drop in coffee prices leading up to 2001, and found that RPS communities were better able to maintain their household expenditures and resist major increases in child labor. From this, he was preliminarily able to conclude that the RPS had shown evidence of providing risk protection to economically vulnerable families.

Several studies have sought to disentangle the supply and demand impacts of the RPS program. It is typically very difficult to do this in CCT research, partially because most require supply to be readily available. Regalia & Castro (2007) studied RPS recipient communities after the subsidies had been dropped, but where supply-side benefits continued to be implemented, and found a still high

utilization of health centers in those communities that had received sound education on the benefits of maintaining health services.6 They concluded from this that the supply-side interventions can carry on the work of cash transfer programs as long as the mechanism for behavioral change is strongly implemented.

Other studies have focused on the administration of RPS: e.g. the structure and function of the public-private partnership for health delivery (Regalia & Castro, 2007); cost-effectiveness of RPS (Caldes, Coady & Maluccio, 2006); and various tests of the targeting efficiency of the program.

Data, Variables and RPS Targeting

The Nicaraguan dataset for *Red de Protección Social* is offered free of charge by the International Food Policy Research Institute (IFPRI), by request.[27] The names of participants were removed before releasing the dataset to the public. The program was designed in 1999, piloted from 2000 to 2002, and expanded from 2003 to 2006. The data used in this analysis is the only data currently available (as of October 2008) and came from the pilot, which involved 6 communities. The RPS population census, used both for initial targeting and to follow the individuals in the program, contains information about household characteristics, employment, education and expenditures, among other variables, and includes 11,994 households (69,459 individuals). IFPRI has made publicly available the census, the 2000, 2001 and 2002 follow-up data; treatment and control data files, and

[27] http://www.ifpri.org/data/Nicaragua01.htm

documentation of assignment of household communities. Survey instruments and manuals are also available for download in PDF version, as are the codebooks for some of the data sets. The RPS documentation is offered in English as well as in Spanish.

Targeting of the program proceeded in three phases. First, it was determined that rural areas in all 17 departments in Nicaragua would be eligible. The Government of Nicaragua then selected two departments to participate in the pilot, *Madriz* and *Matagalpa* for the reasons discussed previously. Within these two departments, six municipalities were chosen out of 20 possible municipalities: *Totogalpa, Yalagüina, Terrabona, Esquipulas, El Tuma-La Dalia*, and *Ciudad Darío*. These six were the only municipalities in the two departments that participated in a program called *Microplanificacion Participativa*, whose purpose is to develop local/municipal capacity for administration. Though chosen partly for their institutional capacity, subsequent analysis showed them to be well-suited to receive benefits, with populations in which 78 to 90% were classified "poor" or "extremely poor", compared to a national average of 45% poor and 21% extremely poor (IFPRI, 2005). Finally, within the chosen municipalities, a marginality index was created for each rural *comarca*. The index was created based on the 1995 National Population and Housing Census, and constructed as a weighted average of four poverty indicators for all 59 *comarcas* in Madriz and Matagalpa. The four measures were: 1.) Average family size (weight of 10%); 2.) Percent without piped water in home or yard (50%); 3.) Percent

without a latrine (10%); and 4.) Percent of persons over five illiterate (30%) (IFPRI, 2005). Based on the marginality index, each *comarca* was assigned a priority level 1 through 4 and the levels of highest priority (1 and 2) were given first eligibility to the program by allowing them to participate in the pilot study. Within the *comarcas*, no poverty targeting was done at the household level- benefits were then determined according to the specific characteristics of the household, e.g., how many school-aged children lived in the household.

The design of the Nicaraguan evaluation allowed for a natural experiment. Beneficiaries were randomly selected from within a group of *potential* beneficiaries all with similar characteristics. IFPRI used a community-based randomized intervention to create groups, taking extensive survey data before and after the implementation of the program. Making use of the limitation on resources, implementation was staggered, thus allowing one group to receive treatment before the other; the former was used as a treatment group for purposes of evaluation, and the latter as a control.

Of the 59 *comarcas*, 42 fell in the first and second priority groups, and so were part of the pilot. Of these 42, 21 were randomly selected into the program, and 21 remained as the control group. The control groups were originally to be incorporated within one year, but entrance was delayed until a little over two years due to a government audit. Despite the unfortunate delay of the communities' entrance into the program and access to the benefits thereof, the delay did allow for a greater experimentation period. The implementation of health

benefits did not begin until the beginning of October 2001-also later than planned. However, the second follow-up survey took place in October 2002, thus representing a full year of all participants receiving all benefits (IFPRI, 2005).

Table 9
Nicaraguan RPS beneficiary co-responsibilities monitored in pilot phase

Program requirement	Households with no targeted children	Households with children ages 0-5	Households with children ages 7-13 who have not completed fourth grade
Attend bimonthly health education workshops	✓	✓	✓
Bring children to prescheduled healthcare appointments		✓	
Adequate weight gain for children under 5		✓	
Enrollment in grades 1 to 4 of all targeted children in the household			✓
85% attendance of all targeted children in the household			✓
Promotion at the end of the school year[a]			✓
Delivered teacher transferred to teacher			✓
Up-to-date vaccinations for all children under five years[b]		✓	

Source: Maluccio & Flores, 2004
[a] Adequate weight gain requirement was discontinued in 2003
[b] Condition was not enforced

COLOMBIA

The Colombian economy has at times been considered one of the most stable in the region, but suffered great volatility during the 1990s (WB, 2002). Before that time, prudent management of the Colombian economy had allowed for a stable economy with low government debt

levels and low inflation. After a slow down in the 1980s, economic adjustment policies were enacted that helped restore stability and towards the end of that period the economy, once dependent on coffee farming, diversified, leading to growth. However, trade liberalization policies of the 1990s hurt farmers and pushed up the prices of certain goods. Concomitantly, public spending began to rise at an unsustainable rate both for social programs and to combat the increasing violence, leading to an increased reliance on external debt financing (World Bank, 2002). On top of all of this, an earthquake in the coffee region of Colombia in early 1999 dramatically increased the amount of spending required by the government.

Despite a decline in poverty during the 1980s and the first half of the 1990s, the incidence of poverty began to rise in 1996, and by 1999 had returned to the 1988 level. Because of the economic volatility, Colombia's population suffered rapidly declining birth rates and an increase in unemployment (WB, 2002). This recession had a particularly adverse effect on the very poorest segment of the population. By 1999, 8 million lived in poverty in the largest seven cities and 2.1 million were classified as extremely poor. The United Nations in 2002 estimated 17 million poor, or 64%, with a 47% urban poverty rate and a 53% rural poverty rate. Great advances had been made in water and sanitation coverage, but there remained infrastructure deficits in rural regions in particular.

Table 10
Urban and rural demographics, Colombia 2002

	Urban	Rural
Percent in poverty	47%	53%
Access to safe water supply	99%	71%
Access to sanitation	96%	54%
Child labor, ages 10-16	10%	19%

Ultimately, the macroeconomic environment must be corrected to attain lesser poverty in the end. In the short run, however, safety nets must be provided for the poor as the economy undergoes transition. This is very much the case in Colombia. As everywhere, being poor makes it more likely that children will have to work rather than go to school. For Colombia, this has been quantified: when household members other than the household head work, the household is much less likely to be poor. In fact, poverty risks are estimated to decrease by 13% for each additional household member employed (World Bank authors, 2002). This means that in order to incentivize education over work it is extremely necessary to supplement income in the short-term.

Public social expenditure in Colombia was 10% below the Latin American average in 2002, but the government has made an effort to raise expenditure (deFerranti et al., 2004). The Constitution in fact mandated increases in social spending, especially in the areas of human capital. The nationwide education plan of 2000 (National Department of Planning, 2000) outlined the major goals of the educational system and provided information on the system at that time. The major goals were: to increase coverage with equity; to

improve quality; and to create a modernized learning environment. At time of writing, according to the DNP, 20% of children were not enrolled in basic education and average schooling in urban areas was almost double that of rural. According to the DNP, of non-enrolled children, 46% cited high costs or the need to work as their reason for dropping out of or not enrolling in school. The stated approach to ameliorate the problem was twofold: to augment administrative efficiency, and to provide money to offset schooling costs. Although the Constitution calls free education, it allows for some fees including matriculation fees at many schools and additional administrative fees at some others. Uniforms and books are significant outlays and uniforms a 'near-universal requirement' (Human Rights Watch, 2005).

Equality in education remains a tremendous problem for the country of Colombia. Over-reliance on private education in the past, as well as disproportionate returns to tertiary education has privileged elite over the poor for decades. Overall, although primary and secondary enrollment rates have shown improvement, access to postsecondary education remains quite limited and skewed heavily toward the upper class. In 1990, Columbia was the only country besides Brazil in which private university enrollment exceeded that of public; 60% of enrollment in universities was at private institutions in 1984 (Patrinos, 1990). Patrinos attributed this rapid expansion of private higher education to two main factors: high excess demand for higher education and political turmoil associated with public universities. In particular, despite an increase in demand for university

expansion during the National Front, politicians did not open universities that are more public nor increase the size of the existing ones due to student unrest. Thus, there is an undersupply of public universities. The Betancour government (1982-1986) attempted to increase postsecondary access to more of the middle class by opening distance education night schools, but these schools were of low quality. Only if one studies at a high-quality university do the benefits of University accrue; therefore, the university system serves to perpetuate the social hierarchy.

The pattern of returns to education in Colombia has great implications for the less educated. College graduates have the lowest rates of unemployment, while individuals with intermediate education: high school dropouts and high school graduates have the highest unemployment rates, greater even than unskilled workers (World Bank 2002). The gap in success between the secondary and tertiary education beneficiaries increased during the recession of the 1990s. The wage skill premium - the extent to which higher education leads to higher wages - is nearly twice that of the United States, and quite a bit higher than Mexico and Brazil. This means that disparities in educational attainment are magnified in the income distribution (deFerranti et al, 2004). These high skill-wage differentials in Colombia will continue to contribute to inequality unless special attention is paid to postsecondary education for lower and middle classes (World Bank, 2002). The first step, of course, is to ensure that all students are even completing primary school and making the transition to secondary.

Overall, the World Bank (2002) reported persistent long-term improvements in social indicators, including completion rates for primary and secondary schooling. Health outcomes, infant mortality and life expectancy, and access to health insurance and basic infrastructure such as water sewers and electricity improved in the 1980s and 1990s; primary and secondary enrollment increased; literacy rates increased and the incidence of child labor decreased. However, the homicide rate, domestic violence and property crimes have all risen since the 1970s with homicide rates in particular concentrated among young men. At the time the poverty report was written, school enrollment was declining, most likely because of the economic recession. This indicates that enrollment remains vulnerable to interruption by external factors.

Special populations

Whereas the major focus in Nicaragua is on ameliorating disparities between rural and urban populations, Colombia has a much higher percentage of urban people and urban poor. Although rural poverty is more extreme than urban poverty, and child labor is higher in rural areas than in urban, rising crime and national inequality over the past few decades have been associated not as much with differences *between* urban and rural regions as differences among individuals within these regions. Welfare improved from late 1980s to the mid-1990s for rural inhabitants, but then decreased for most of the rural population between 1995 and 1999 (World Bank, 2002). The regions with greatest difficulty are the central and Pacific.

There are a few additional major areas of focus in poverty alleviation. In Colombia, female primary school enrollment is higher than that of boys. This, however, is not thought to indicate overall levels of gender equality, but most likely to reflect the entrance of boys in the labor force an early age, especially in urban areas (Arnove and Torres, 2003). In general, as in other countries, female-headed households fare worse economically than do male-headed households. As is the case with Mexico, Colombia has a number of indigenous inhabitants, though also as with Mexico their number continues to decline. Unlike Mexico, Colombia also has a high percentage of African descendents, brought to Colombia as slaves during the colonial era. Blacks are concentrated in the poor Pacific region; they make up 80 to 90% of the population there (Wade, 1995). Though it has not always been the case, current social policy pays some special attention to mobilizing and recognizing blacks as a distinct but relevant group.

Violence and Displaced Persons

One issue that is particularly pressing for Colombia, and that sets it apart from most countries in the world including most of those in Latin America, is the level of crime and violence to which its citizens are subjected. Colombia is the world's largest producer of cocaine, and in turn, cocaine as of 1994 became Colombia's fifth most valuable agricultural commodity. The drug trade and the militarized forces formed to fight the drug lords have led to extreme levels of violence. Due to the violence, the government has lost control over certain parts of the country. Extortion and kidnapping have weakened property

rights, and in some rural areas drug lords, paramilitary groups, or guerrillas have become the de facto leaders (World Bank, 2002). Homicide numbers in Colombia are two or three times higher than those in Brazil or Mexico and surpassed worldwide only by the homicide rate in El Salvador (World Bank, 2002).

Faced with chaos in their communities, the number of persons displaced from their homes, formally called Internally Displaced People (IDP), has risen dramatically. Among the impoverished, those displaced by internal armed conflict rank among the most vulnerable. Most of these people remain in Colombia, but move to medium and large cities where they congregate in shantytowns with little access to infrastructure. In most cases, all family members have to work, including children and the elderly. They are at great risk for increased poverty and disruption of education. The major barriers to education for IDP are space, matriculation fees, the lack of required identification, and cost of schooling. In 2002 according to the Ministry of Education, only 8.8% of displaced children in 22 communities were enrolled in school (Human Rights Watch, 2005).

In addition to the difficulties mentioned above, internally displaced people face an especially high risk of unemployment as there is little market in urban areas for the agricultural skills most of them bring (World Bank, 2002). In addition to the obvious loss of human capital due to violence, the social costs include the cost of public resources to serve victims and increase security. There are psychosocial effects on victims and their relatives as well (World Bank,

2002). The lack of security makes it difficult for people to carry on normal social and economic relations. Afro-Colombians and indigenous are more likely to be affected by conflict, and more than half of IDP are under 18 (HR Watch, 2005).

Education has been identified as the single most important lever affecting social welfare (World Bank, 2002), as among the poor in Colombia, poverty tends to be associated with low skills, low employment rates, and high number of dependents per adult (dependency ratio). The education of both spouses, for instance, improves the chance for the entire family to maintain a high household employment rate, which is in turn extremely important in the escape of poverty. Education has also been found in Colombia to decrease the probability of domestic abuse.

The conclusion of the World Bank Colombia poverty assessment was that a more integrated social protection policy was needed, providing: 1.) social assistance programs for the chronically poor; 2.) social safety nets for those exposed to shocks, and 3.) a strong stable system of public expenditure.

Familias en Accion

Originally begun under Pastrana administration and continued under Uribe, *Familias en Acción* is one of the largest programs implemented by the Colombian government for the poorest sector of society. As with the other CCTs, major donors included the World Bank and the International Development Bank. *Familias en Acción* also

received a grant from the United States and funding from the Colombian government (Interregional Inequality Facility, 2006).

Program Components: Benefits and Requirements

The initial program focused on human capital accumulation in rural Colombia and was in most ways quite similar to the programs in Mexico, Brazil, and Nicaragua already described. There were three main components: nutrition, health and education, with the nutrition subsidy given for families with children under seven years old. Children were not allowed to be enrolled in both *Familias en Acción* and the pre-existing preschool program, *Hogares Comunitario.*

The education subsidy was similar to the program in Mexico, and therefore more robust than that in Nicaragua. It covered children up to 17 years of age and awarded twice as much money for secondary school attendance. The monthly subsidy at the beginning of the program was 12,000 pesos ($US 5) for primary school and 24,000 pesos for secondary school children. The monthly subsidy in 2004 was adjusted for inflation, to 14,000 pesos for primary school and 28,000 pesos for secondary school children. Families with children under seven received a flat transfer to subsidize health costs.

Table 11
Grants and conditionalities, *Familias en Accion*

Grant	Target group	Amount	Conditionality
Health	Families with children aged 0-6	US $17 per month	Compliance with growth and development appointments set by health authorities
Education	Families with children aged 7-18	US $5 per month per child in primary school (2nd to 5th grade)	Attendance of at least 80% of classes during the school year

	US $10 per month per child in secondary school (6th to 11th grade)	Attendance of at least 80% of classes during the school year

Source: Inter Regional Inequality Facility, 2006

The Colombian program was a massive undertaking and required coordination at many different levels. At the national and regional levels, the program was administered by the Colombian Social Welfare Institute (ICBF). To coordinate municipal level activities, municipal liaison offices were created. The national database SISBEN was used to select beneficiaries. This worked well for community buy-in as the system is well respected by beneficiaries (Interregional Inequality Facility, 2006). It helped to lend transparency and legitimacy to the selection process.

Chief Differences/Innovations

Because Colombia had greater resources available, fewer modifications to the Mexican model were required than in Nicaragua. As apparent in the comparison table, the evaluation pilot encompassed many more municipalities and many more households on a far larger budget than was available in Nicaragua. Like Nicaragua, but unlike Mexico, there was no difference in the amount of benefit between girls and boys. This no doubt reflects the fact that the gender disparities in education in Colombia are far less pronounced than were those in Mexico at the time of implementation.

One important innovation of the Colombian program that had not been implemented in any previous CCT is that conditionality

monitoring was outsourced to a private firm. Since the conditionalities are such an integral part of program design, the system for monitoring compliance cannot be neglected. The impact of the monitoring system on the effectiveness of the program cannot be directly inferred from the current study, but is certainly an avenue for future research.

Although perhaps not an innovation in program design itself, the use of an already- established national database to identify participants (SISBEN) decreases the likelihood that beneficiaries and non-beneficiaries will react negatively to the fact that certain households are chosen and others left out of a CCT program. Given the evidence of social discord due to the confusion surrounding household-level selection in Mexico, it seems preferable in this case that such a database exists to use that rather than creating a new, less transparent process for beneficiary selection.

Data and Targeting

The Colombian data and documentation were all in Spanish. The files were downloaded from the website of the DNP (National Department of Planning), specifically from a site dedicated to evaluation documents, Sistema Nacional de Evaluación de Resultados de la Gestión Pública. The program was initially implemented in 691 out of 1060 municipalities[28] in 26 departments. The municipalities had to meet several criteria, similar to those stipulated by the Nicaraguan program. In particular, participating municipalities had to have basic education and health infrastructure already in place and to have at least one bank. Additionally, and particular to Colombia, participating

[28] The baseline evaluation included 622

municipalities had to have fewer than 100,000 inhabitants, to not have received aid after the 1995 earthquake, and could not be the capital of any of the regional districts. Unlike with the Nicaraguan program, not all families within eligible geographical units were eligible to receive the program. Within qualifying municipalities, all families classified as SISBEN1 were eligible to participate in the program. At the end of October 2002, 407,076 families were eligible, with 362,403 families as beneficiaries.

The second follow-up survey in 2006 included 9,566 households and 57,099 individuals. This represented 89% of the respondents interviewed in 2000. Of these, 5834 were children below six and 19,386 were children and youth 0-17. Ninety-seven surveyors participated in the second follow-up survey, with the requirement that all who participated in the follow up had to also have participated in the baseline survey collection.

Table 12
Survey sample sizes, Colombia

Unit	Baseline	Second follow-up (end of pilot)
Municipality	122	122
Households	11,462	9,566
Individuals	68,608	57,411
Individuals over 7	51,003	19,386

Source: IFS,2003; 2006, Instructions to evaluation data, FA website

The data consists of a number of modules, containing household, individual, program participation, etc. data. Additionally, there is a module specific to gathering information on each municipality as a whole; one devoted to educational institutions; and one to health institutions.

Research on *Familias and Acción* has mostly been conducted by Attanasio et al. of the Institute for Fiscal Studies. In addition to impact evaluations (in 2005 and 2006), the team has conducted research on the program's effect on consumption (Attanasio & Mesnard, 2006) and child health (Attanasio et al., 2004). The impact evaluations showed evidence of increased school enrollment, with greater impact for older children, particularly males.

CHAPTER 5: NICARAGUAN DESCRIPTIVE STATISTICS AND FINDINGS

HOUSEHOLD AND INDIVIDUAL LEVEL DATA

Control and Treatment

There were two variables in the Nicaraguan data set that could be considered for use in the impact evaluation of this program. The first, "treatment," reflects the original designation by program designers in the evaluation team. In the initial sampling, the number of control and treatment individuals was roughly proportional. Once selected, however, representatives of the *comarcas* were given the opportunity either to accept or to reject participation in the program. There were some *comarcas* initially selected into the treatment group that did not actually participate in the program as well as households within participating *comarcas* that did not participate. The dataset contains a distinct dummy variable for each household to reflect the acceptance of the program in addition to the dummy for mere selection. A slightly smaller number of eligible *comarcas* and households actually participated in the program, leaving a smaller proportion of individuals in the true treatment group. For purpose of this study, since the goal was to determine the actual effect of the program, the variable for acceptance was used in the models estimating impact.

Table 13
Numbers and Percentages of Comparison, Treatment and Accepted at Start of Program

	comparison		"treatment"	
Individual (N = 9747)	4827	49.5%	4920	50.5%
Household (N = 1746)	875	50.1%	871	49.9%
Community (comcens) (N = 42)	21	50%	21	50%
	Actual Participation			
	comparison		"accepted"	
Individual	5077	52.1%	4670	47.9%
Household	958	54.9%	788	45.1%

Table 14
Numbers and Percentages of Comparison, Treatment and Accepted at end of Program

This	comparison		"treatment"	
Individual (N= 9482)	4708	49.7%	4774	50.3%
Household (N = 1453)	687	47.3	766	52.7%
Community (comcens)	21	50%	21	50%
	Actual Participation			
	comparison		"accepted"	
Individual	4923	51.9%	4559	48.1%
Household	726	50%	727	50%

Family and Community Level Characteristics and Parental Preferences

The descriptive statistics for the family and community-level variables were taken directly from the IFPRI dataset at baseline (2000). As shown in the above tables, there were 1746 households in the sample in 2000, and 1453 in the final sample. The sample for which all three-panel observations (2000, 2001 and 2002) were made is 1359 households. As is evident, at the end of the program, the proportion of control and treatment households remaining was almost identical.

Overall, households averaged six members, but ranged in size from a single individual to 18 members. Approximately 60% of adults reported being married or living together as couples. This varied some by gender, the most significant difference being a greater proportion of single males and a greater portion of separated or widowed females (Table 15).

Table 15
Civil Status at Baseline, Over 25

	Total	Male	Female
Together (civil union)	38%	41%	35%
Married	39%	40%	38%
Separated	7%	3%	10%
Divorced	1%	1%	1%
Widowed	8%	4%	11%
Single	9%	12%	6%

Marginalization and Poverty Index

The marginality index was compiled based on several indicators of poverty. The concentration of marginality indices was then used to construct a priority level for each *comarca*, with priorities 1 and 2 being eligible for the pilot phase of the RPS. This is reflected in the pilot data: each individual either had a 1st or 2nd level priority assigned to his or her *comarca.* Overall, about three quarters of the individuals (all ages) in the RPS baseline survey lived in *comarcas* with priority level 2, leaving a quarter who belonged to the very most impoverished communities in the surveyed area. A slightly higher percentage of treatment individuals than control lived in comarcas with the highest concentration of poverty. Practically speaking, this means that a slightly greater proportion of the treatment households were

experiencing severe poverty at the start of the program than were control households.

Table 16
Marginality by Priority Index (individuals)

		Total (%)	Comparison (%)	Treatment (%)	Difference (T-C)
Priority Index (N = 9747					
	1	22.6	20.2	24.9	4.7**
	2	77.4	79.8	75.1	

A greater percentage still of the poorest communities accepted participation in RPS, such that the final treatment sample population was 25% of priority 1 and the control sample only 20% priority 1. The baseline difference in poverty levels between the treatment and non-treatment groups has been discussed by other evaluators of the RPS program as a factor that slightly diminishes the quality of the experimental design (Maluccio & Flores, 2004). Measuring outcomes before and after the intervention, however, helps to minimize any bias that would come from this sampling error.

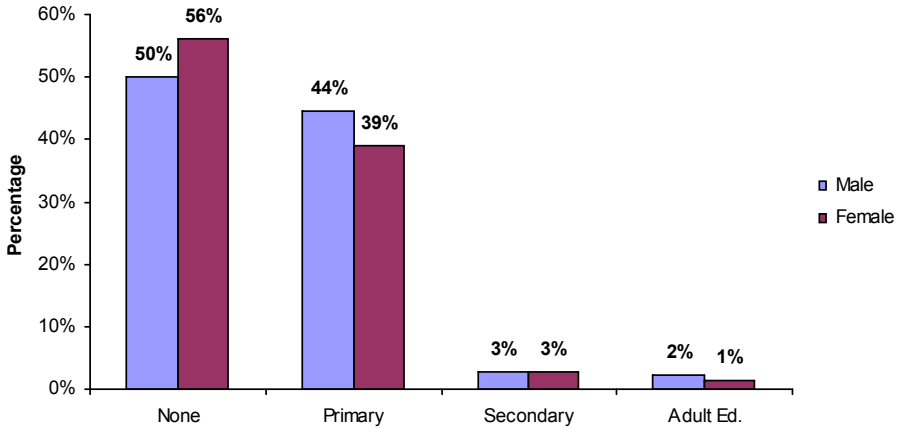
Literacy and Schooling Characteristics

The RPS survey collected literacy information through self-reporting by respondents. Respondents were given the options: "can only read," "can read and write" and "can neither read nor write." Of the individuals over 25, taken to represent an overall indication of the state of literacy, 36% classified themselves as fully literate (able to both read and write), with a larger percentage of males reporting being literate.

Table 17
Gender comparisons for select demographic characteristics, baseline, Over 25

	Total %	Male %	Female %
Literacy, Over 25 N = 2962			
Can read and write	36	39	33
Can only read	4	4	3
Can neither read nor write	60	57	64
Level of Schooling Attained N = 2962			
None	53	50	56
Preschool	0	1	1
Adult Education	2	2	2
Primary	42	45	39
Secondary	3	3	3
Technical (All Levels)	0	0	0
University	0	0	0

Figure 2. Baseline educational attainment, over 25



Mother's Educational Attainment

Creating the variables related to mother's educational attainment was somewhat indirect given the structure of the RPS data set. A separate data table was created for women, and then those who

had classified themselves as "head" or "spouse of head" for the variable "relationship with head of household" were further separated out to identify the probable mothers from single women. Their educational attainment variables were renamed to indicate that these were the characteristics of mothers, and then matched back to their children in the 7-13 dataset by household ID. Thus, for example, any children with household ID 001 would have had the mother's educational attainment variables associated with the female head or spouse with household ID 001. Approximately 50% of mothers had received no schooling. Almost all of the rest had attended primary only, with 90% having completed fourth grade or lower.

Table 18
Mothers' educational attainment by level

	Frequency	Percent
None	2757	51%
Adult Education	72	1%
Primary	2425	45%
Secondary	121	2%
Technical	8	0%
University	8	0%

Table 19
Mothers' Educational Attainment by Grade

	Frequency	Percent
None	2757	51%
1	427	8%
2	572	11%
3	708	13%
4	506	9%
5	190	4%
6	229	4%

Whether Parents are Present in the Home

Using the 7-13 dataset, 21% of the children reported having fathers that did not live at home. A smaller percentage of mothers, 8%, were reported as not living at home. The absence of a parent is suspected to change the preferences of the remaining parent with respect to resource allocation. This is particularly the case if the absent parent is unable to contribute funds to the remaining family. It is not possible in the RPS data set to determine whether the absent parent is contributing funds.

Income/Consumption

Average annual per capita expenditure for all households, taken from the household module of the RPS survey, was C$3,880 at baseline, and C$3,871 at the end of the program. Even without adjusting for inflation, the expenditures were lower at the end of the program.

Table 20
Average annual expenditures, all households

	Baseline N = 1581			End of program N = 1397		
	Mean	US$ 2000[a]	US$ 2009[b]	Mean	US$ 2002[c]	US$ 2009
Total annual expenditure (C$)	20,290 (313.7)	$1600	$1279	19,759 (311.9)	$1387	$1163
Total per capita annual expenditure	3880 (72.7)	$306	$245	3871 (75.7)	$272	$228

[a] Exchange-rate in 2000 was 12.68 (CIA Factbook)
[b] 2000 inflation adjuster as of January 2009 was 0.79946
[c] 2003 inflation adjuster as of January 2009 was 0. 8388

BASELINE MEASURES, STUDENT-AGED POPULATION

As described in Chapter 1, the overall goal of the RPS program was to reduce the transmission of intergenerational poverty through various means, and especially through increased schooling at the primary level. The major focus of the program was on children of primary school age, particularly ages 7-13. Cash and other benefits were directed to these children. The remainder of this analysis examines the preliminary and post-program states of educational and work-related variables, and the effect of the RPS program on those who participated in it.

Enrollment

As self-reported by the children, total enrollment at the start of the program was 66%. As would be expected of this age range, the vast majority of students were in primary school in 2000. Of these, most attended a traditional public school. Sixty-nine percent of the children reported being in a multi-grade classroom. This could either be evidence of supply-side constraints or of low demand, making it not cost effective to have separate classes for each grade.

Confirming the UN poverty assessment findings of 2001, there is an evident drop off in enrollment from grade to grade (Table 21). In 2000, 42% of enrolled children between ages 6 and 15 were concentrated in the first grade, while only 3% could be found in the sixth grade. In fact, the majority of 6, 7, and 8-year-olds were in the

first grade at the baseline of the program and the majority of nine-year-olds were in the second grade. Literature suggests that concentration in the lower grades may be attributable to a number of factors including a late start to education, high attrition each year, and low promotion rates due to failure to pick up the appropriate skills to move from first to other grades.[29]

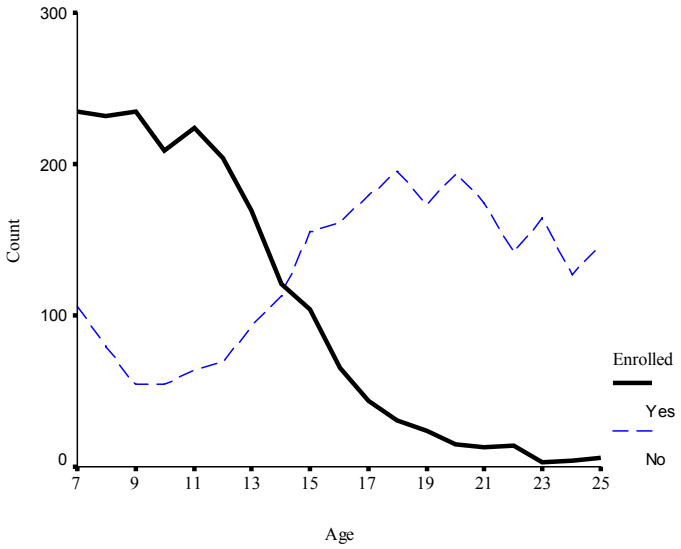
Table 21
Distribution of enrollment by grade and age (6-15), Baseline (2000)

	Grade						
Age	1	2	3	4	5	6	Total
6	116	11	24	1			152
7	188	35	11	1			235
8	137	67	26	2			232
9	81	85	52	16	1		235
10	51	68	47	34	7	2	209
11	51	33	45	47	38	10	224
12	39	35	40	49	26	15	204
13	30	32	22	28	33	24	169
14	27	16	20	26	18	14	121
15	26	17	11	10	19	21	104
Total	**746**	**399**	**298**	**214**	**142**	**86**	**1885**

Plotting age by percent and number of children enrolled, the pattern becomes clearer (Figure 3). Presented in linear form, age 15 appears to be the point at which the proportion of unenrolled children begins to surpass that of enrolled children. The falloff in enrollment, however, begins before that, at around the age of 11.

[29] Certain government administrations had, in fact, instituted automatic promotion from first to second grade in order to counter the widespread phenomenon of holding children back in the first grade (Arnove & Torres, 2003), but this policy was not in place at the time of the start of the RPS program.

Figure 3. Enrollment by Age.



Reasons for Non-Enrollment

All RPS respondents ages 6 through 17 who were not enrolled were asked why they were not enrolled and given a number of options. In the communities served by RPS, the stated reasons for not enrolling largely affirmed human capital theory assumptions. The major reason given by both boys and girls for not enrolling in school was "*problemas economicos*" (economic problems). Additionally, there were a small percentage of children (13% of boys and 4% of girls) who identified distance from school as a reason for not attending. This does suggest that there remained some supply constraints as well, even in these communities that were deemed overall to have a sufficient supply of schools.

One slightly unexpected response to the question was "*por edad*" meaning "due to age." Given that the analysis for this question was limited to children ages 7-15, the response that a child was not enrolled in school due to age is somewhat interesting. It is impossible to determine from the available data what factors contributed to this perception; be it lack of access to secondary schooling, rendering the conceivable age of schooling to be limited; community perceptions of appropriate schooling; misunderstanding or mistaken responding to the question; or dropping out of school if outside of the range of receiving benefits. For males, 8% of respondents gave this answer in 2000, while 9% of females gave the response.

Table 22.
Reasons for Unenrollment by Gender, Baseline

	Male	Female
Economic problems	37%	40%
Work or labor in the fields	21%	4%
No school nearby	13%	4%
Age	8%	9%
No interest	6%	0%
Domestic labor	1%	10%
Other1	14%	33%

1. The remaining possible responses were: Por enfermedad (Illness); Matrícula cerrada (Closed enrollment); No hay grado ofrecido (Grade not offered); Falta de profesores (Lack of teachers); Discapacitado (Disabled); Otro (Other)

Absenteeism and Retention

Although not one of the major stated goals of RPS, increasing attendance has been a major educational goal for most of the conditional cash transfer programs to date. Insofar as attendance increases one's chances of being promoted on time, and retention has been shown to have the effect of increasing the chances of dropping

out, increased attendance (reducing absences) contributes directly toward the goals of increasing enrollment and reducing dropout.

In the RPS dataset, attendance rolls from participating schools were not available. Thus, it was necessary to use a proxy for attendance: "days missed last month," as self-reported by interviewees. Before the RPS program was implemented, 63% of children had had perfect attendance for the previous month. The reasons for missing school were varied, with illness cited most often.

Returns to schooling: Schooling Expectations and distance to school

The RPS survey had respondents indicate their desire for schooling with the question, "What level of study would you like to reach?" For purpose of this study, this variable is considered a proxy for schooling expectations. At the beginning of the program, a simple majority of all male respondents (42%) sought to complete secondary school. The rest were divided more or less evenly between wanting to finish primary school and wanting to finish university. For females, the pattern was similar, although a slightly greater percentage aspired to complete University.

Table 23
Schooling Expectations, baseline

	Male	Female
Primary	29%	27%
Secondary	42%	42%
University	26%	28%

Direct cost: School Fees and Expenditures

Because one of the key components of the RPS was to provide income assistance to the poor to allow them to increase expenditures in key areas, the RPS household survey also collected information on the costs associated with schooling encountered by each household. All individuals - parents and children - were asked about monthly scholarships and other fees, transportation costs, enrollment fees, and costs for uniforms, supplies and books. In a different part of the survey, household heads summarized expenditures for their entire households by major categories. This simplified number is used later in the regression model. The detail is used here for greater transparency of spending, though it is considered less reliable since children's responses were included. This presentation and way of asking questions related to expenditure in the original RPS data set were scattered enough to call into question the reliability of the data.

Table 24
School Costs and Amounts, Descriptive

	Reported (Y) to Fee %	Mean	Median	Average 2000 US $	Average 2009 US $
Distance to school (m)	N/A	201	100	-	-
Monthly Fees					
Monthly fee	15	10 (7)	10	$0.79	$0.63
Monthly scholarship fee	14	15 (13)	10	$1.18	$0.94
Transportation	15	24 (29)	18	$1.89	$1.51
Total	N/A	47	15	$3.71	$2.97
Annual Fees					
Annual Enrollment fee	21	15 (24)	5	$1.18	$0.94
Uniform	48	152 (98)	130	$11.99	$9.59
Supplies	68	45 (28)	28	$3.55	$2.84
Books	48	8 (11)	5	$0.63	$0.50
Total	N/A	145 (173)	95	$11.44	$9.15

The majority of children in the RPS survey communities traveled to school by foot to schools nearby. Thus, fees for transportation appear rare, and where they exist, do not come to a significant amount. Enrollment fees are equally rare and when present not especially high. The most frequent and substantial direct costs are for uniforms, supplies and books. The enrollment stipend offered by RPS was 1,440 *cordobas* per year (120 per month) and the school supply stipend was 275 *cordobas* per year given in one lump sum.

Using the expenditures reported by the household heads, overall average monthly educational expenditure was C$319 total and C$47 per child at the start of the program. Assuming these to be more accurate estimates of school costs, the monthly stipend would have covered about 40% of the average educational cost per household in this sample. Differentials in educational expenditure by control and treatment households are discussed below.

Table 25
Total educational expenditures, all households

	Baseline N = 1581		End of program N = 1397	
	Mean	Standard error	Mean	Standard error
Total educational expenditure	319	23	717	34.6
Total per capita educational expenditure	47	3.4	111	5.3
% Educational/Total Expenditure	1.24	0.00075	3.2	0.0012

Opportunity Cost: Trade-off between Work and Schooling

At baseline, slightly fewer than one quarter of boys and very few girls reported having worked the previous week. Of those who worked, boys averaged nine additional hours of work per week than did girls. Of those who did not work, the most frequently given reason for not working was school/study (61% of females and 55% of males offered this response). A small percentage (5%) of girls stayed home and did domestic chores instead of working.[30]

To illustrate more effectively the extent to which work competed directly as an alternative to schooling in the target communities before implementation of RPS, schooling, work and housewifery were placed on the same graph. The incidence of work begins to increase around age 9, with the chief alternative being schooling. The first age at which work exceeds schooling as the activity of preference is age 15. Until the age of 12, there were no reported instances of children foregoing schooling in order to stay home and perform domestic duties. At approximately age 16, however, housewifery surpasses schooling as the chief alternative for work, almost exclusively for females. The possible implications of these findings for future educational interventions are offered in the concluding chapter.

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[30] This was the majority alternative in each case. For those that did work, the average number of hours worked per week for boys was 29, but the mode was 48 and the median 30. . The median number of hours worked by girls was 20. 23.4% of school agedschool-aged boys reported having worked the previous week. By contrast, only 4.8% of school-aged girls reported having worked. For those that did not work, 61% of females and 55% of males offered study as their alternative to work.

Figure 4. Schooling against Work (Outside and Inside the home), Baseline

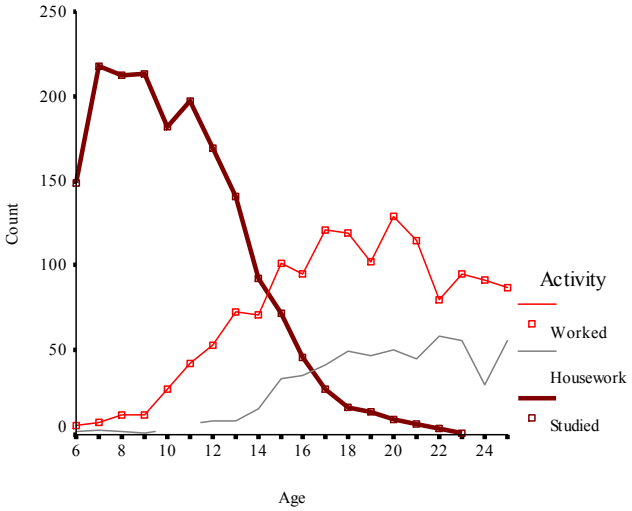


Figure 5. Schooling against Work (Outside and Inside the home), Baseline, males

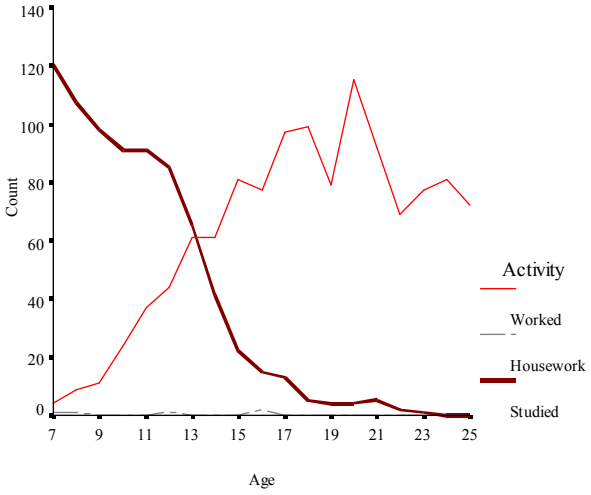
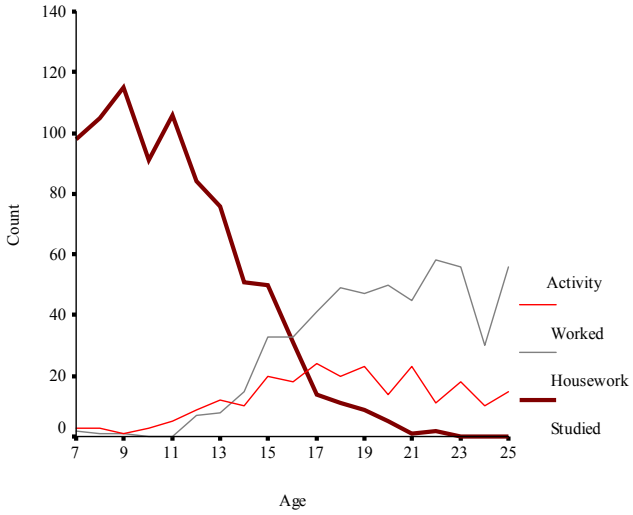


Figure 6. Schooling against Work (Outside and Inside the home), Baseline, females



Summary of baseline characteristics for student aged children

Although more promising than literacy and school characteristics for the adult population in the same communities, the statistics for school age children in the control and treatment villages considered for RPS confirmed the need for intervention at the primary school level. In particular, the still low rate of school enrollment, a drop-off in enrollment from grade to grade, and the extremely low enrollment manifested in later primary grades are cause for concern. This is especially troubling when considering that the majority of children *do* have the desire to reach secondary school; the desire does not seem to conform to the reality of most children. The discrepancy is certainly largely attributable to the economic difficulties cited by the majority of

children not enrolled at the time of the survey, as by the inverse relationship between work and school as the chief activity in the children's lives.

FINDINGS

Enrollment

For the test of program effect on enrollment at the individual level, a logistic regression was created with enrollment as the dependent variable:

> Probability (Enrolled) = β1 (mother's last grade reached)+ β2(mother present)[31] + β3(number of siblings) + β4(gender) + β5(secondary expectations) + β6(community school distance) + β7(community frequency of children in multigrade classrooms) + β8(work dummy) + β9(age) + β10(age squared) + β11(ln community average educational expenditure) + β12(program participation)

It was necessary in order to remain true to human capital theory that a variable for educational expenditure and a variable for total expenditure be used. As discussed above, using the community mean for school expenditure was a way of avoiding endogeneity with individual enrollment. The coefficient on acceptance was taken as an

[31] In addition to those included in the model, whether the father was present in the home was also considered. . Having run a correlation matrix (see Appendix 2) for all the possible variables, however, mother and father present were found to be too closely correlated to use both.

estimate of impact. The regression was run at baseline as well as at the end of the pilot (2002). As presented in Table 25, at baseline, the acceptance variable was not significant, indicating that there was no significant difference in enrollment between the treatment and control groups at the start of the implementation. Thus, we can plausibly attribute any difference in enrollment at the end of the program to participation in the program. The variables that proved significant were the dummy for work, the age variables, mothers' educational attainment, and community expenditure on education.

Table 25
Total educational expenditures, all households

	Baseline N = 1581		End of program N = 1397	
	Mean	Standard error	Mean	Standard error
Total educational expenditure	319	23	717	34.6
Total per capita educational expenditure	47	3.4	111	5.3
% Educational/Total Expenditure	1.24	0.00075	3.2	0.0012

Table 26
Individual Model. Baseline. Effect of RPS on Enrollment.

	Enrollment			
	B	Odds Ratio	Marginal Effects	S.E. (robust, clustered)
Ln pc total expenditure	0.494**	1.64	0.081	0.14
Community mean (ln per capita educational expenditure)	0.304	1.35	0.049	0.35
Work dummy	-1.920**	0.15	-0.415	-1.92
Age	1.528**	4.61	0.249	1.55
Age-squared	- 0.074**	0.93	-0.012	-0.07
Secondary Expectations	0.216	1.25	0.035	0.13
Community mean school distance	0.001	1.00	0.000	0.00
Mother's educational level	0.176**	1.19	0.029	0.04
Mother present	-0.035	0.97	-0.006	0.24
Number of siblings	-0.023	1.02	0.004	0.02
Gender	0.104	1.11	0.017	0.13
Community frequency of students in a multi-grade classroom	0.004	1.00	0.000	0.00
RPS participation "Acceptance"	-0. 023	0.98	-0.004	-0.01
Number of cases		1689		
-2 log likelihood		-802.17		
Wald chi2(13)		184.09**		
Pseudo R2		0.13		

Notes: *Significant at 5% level, ** significant at 1% level.
y = Pr(enrolled) (predict) = .79431083

At the end of the program, participation did in fact seem significant even given the included controls. Although a few other variables were still important, RPS participation remained the third largest effect after work and age. Based on the marginal effect of acceptance, being a program participant resulted in a 7% increase in the probability of enrollment, so the program could be considered successful.

Table 27
Individual Model. End of Pilot (2002). Effect of RPS on Enrollment.

	Enrollment			
	B	Odds Ratio	Marginal Effects	S.E. (robust, clustered)
Ln pc total expenditure	0.331	1.39	0.017	0.33
Community mean (ln per capita educational expenditure)	0.108	1.12	0.006	0.28
Work dummy	- 2.146**	0.12	-0.245	0.33
Age	3.031**	20.7	0.155	9.60
Age-squared	- 0.145**	0.87	-0.007	0.02
Secondary Expectations	0.759**	2.14	0.039	0.61
Community mean school distance	0.002	1.00	0.000	0.00
Mother's educational level	0.315**	1.37	0.016	0.09
Mother present	-0.056	0.95	-0.003	0.43
Number of siblings	0.037	1.04	0.002	0.05
Gender	0.021	1.03	0.001	0.16
Community frequency of students in a multigrade classroom	-0.003	0.99	-0.000	0.01
RPS participation "Acceptance"	1.361**	3.90	0.073	1.25
Number of cases		1715		
-2 log likelihood		504.92		
Wald chi2(13)		234.6**		
Pseudo R2		0.2131		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(enrolled) (predict) = .94593968

A slightly abbreviated model was run at the *comcens* level. Comcens enrollment data represents the percentage enrollment. Therefore, enrollment in the comcens was a continuous variable and linear regression was used rather than logistic. Using a measure of educational spending would have been here endogenous; it was left out of the community model.

Table 28
Change in % enrollment, 2000-2002, by control and treatment comcens.

	% Enrollment		
	Control	Treatment	Difference
Baseline (2000)	76	74	-2
After RPS (2002)	83	95	12**

Table 29
Community model. Baseline. Effect of RPS on Enrollment.

	Enrollment	
	B	S.E.
Ln Average total spending per capita	-3.868	0.793
Mean Hours worked last week	5.450*	0.037
Age	26.882	0.830
Age-squared	-0.072	0.991
Community mean school distance	0.057	0.058
Mean Mother's educational level	8.919	0.119
Average % mother present in home	0.748	0.154
Number of siblings	2.478	0.655
Community frequency of students in multigrade classrooms	-0.105	0.519
RPS Treatment or Control	-1.593	0.718
Number of cases	42	
F	5.52**	
R Square	0.470	

Notes: 1.) *Significant at 5% level, ** significant at 1% level.
2.) Standardized coefficients not calculated because they cannot be used with robust estimation.

Table 30
Community model. End of Pilot (2002). Effect of RPS on Enrollment

	Enrollment	
	B	S.E. (Robust)
Ln Average total spending per capita	0.227	0.200
Mean Hours worked last week	1.779	1.108
Age	-91.714*	44.982
Age-squared	4.747	2.219
Community mean school distance	-0.008*	0.021
Mean Mother's educational level	6.321	3.010
Average % mother present in home	1.131	2.719
Number of siblings	-0.008	0.082
RPS Treatment or Control	10.707**	2.977

Number of cases	42
F	4.47**
R Square	0.570

Notes: *Significant at 5% level, ** significant at 1% level.

At the community level at baseline, the model proved significant at the 1% level although only the number of hours worked was significant. Most importantly, there was no significant difference between control and treatment groups. The R-square and adjusted R-square were decidedly higher than that for the individual model, indicating a better fit at the community level. Because the selection was randomized at the *comcens* level, this is not surprising.

At the end of the program, three variables were significant: age, average school distance and program acceptance. Being a treatment *comcens* was correlated with an 11% greater enrollment rate.

Attendance and Retention Rate

The attendance numbers were only gathered for those students who had answered yes to the enrollment question. After calculating the average number of days missed before and after the program, a dummy variable was used for perfect attendance or not perfect attendance.[32] In specific terms, with regard to attendance by treatment group, the program appears to have yielded significant decreases in the number of absences for the RPS participants. Taken

[32] The model was also tried using days missed as a continuous variable with a linear regression. . The results were similar, but R-squared was lower and the coefficients on the variables also lower.

as a whole, the group showed a significant difference in days missed at the start of the program, but the treatment group started with a higher absentee rate. The total treatment mean fell from 3 days at the start of the program to less than one day missed on average per month. For males, a slight mean difference in the baseline (the treatment group actually had a slightly *higher* absentee rate) became a significant difference, with the average number of days missed falling to ½. The pattern was similar for girls.

At baseline, at the time each household was interviewed, 63% of boys had had perfect attendance for the previous month. The rest were scattered between 1 day and 22 days missed. The reasons for missing school were varied, with illness cited most often.

Table 31
Mean number of school days missed (Attendance), Control and Treatment, 2000-2002

	Average days missed		
	Control	Treatment	Mean Difference (T – C)
Total			
Baseline (2000)	2.6	3.1	0.5*
After RPS (2002)	1.6	0.6	- 1.0**
Male			
Baseline (2000)	2.7	3.3	0.6*
After RPS (2002)	2.0	0.6	- 1.4**
Female			
Baseline (2000)	2.5	2.9	0.4
After RPS (2002)	1.3	0.5	-0.8

Using the regression model at baseline to control for other factors, the dummy variable "absence" was used to identify students

who had missed one or more days of school the previous month.[33] There was a slight difference between the control and treatment groups in baseline retention rate while controlling for other variables. However, future RPS participants were at that time 11% more likely to have missed school than the control.

Table 32
Individual Model. Baseline. Effect of RPS on Attendance.

	Attendance			
	B	Odds Ratio	Marginal Effects	S.E. (robust, clustered)
Ln pc total expenditure	0.010	1.010	0.002	0.156
Community mean (ln per capita educational expenditure)	-0.120	0.885	-0.028	0.243
Work dummy	0.835**	2.305	0.204	0.282
Age	-0.220	0.803	-0.051	0.010
Age-squared	0.010	1.010	0.002	0.181
Secondary Expectations	-0.082	0.922	-0.019	0.001
Community mean school distance	-0.004**	0.996	-0.001	0.007
Mother's educational level	-0.035	0.965	-0.008	0.037
Mother present	0.116	1.123	0.027	0.218
Number of siblings	-0.065**	0.938	-0.015	0.027
Gender	-0.006	0.994	-0.001	0.133
Community frequency of students in multigrade classrooms	0.000	1.000	0.000	0.298
RPS participation "Acceptance"	0.267*	1.306	0.113	0.243
Number of cases		1291		
-2 log likelihood		-826.51		
Wald chi2(13)		41.79**		
Pseudo R2		0.030		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .36757236

[33] The question asked how many daysdays respondents had missed the previous month. Those who answered "0" were coded 0 for "absence"; all other responses were assigned a 1 to indicate that they had missed one or more days.

At the end of the program, the dummy for work and the dummy for RPS participation showed the largest and most significant effects with acceptance yielding a 14% decrease in the probability of missing school. Working resulted in a 13% increase in the probability of a child's missing school.

Table 33
Individual Model. End of program. Effect of RPS on Attendance, Standard Logistic Regression.

	Attendance			
	B	Odds Ratio	Marginal Effects	S.E. (robust, clustered)
Ln pc total expenditure	0.129	1.138	0.016	0.121
Community mean (ln per capita educational expenditure)	0.193	1.213	0.025	0.145
Work dummy	0.816**	2.262	0.132	0.260
Age	-0.181	0.835	-0.023	0.413
Age-squared	0.007	1.007	0.001	0.021
Secondary Expectations	-0.239	0.788	-0.030	0.144
Community mean school distance	0.001	1.001	0.000	0.001
Mother's educational level	-0.057	0.944	-0.007	0.041
Mother present	0.331	1.393	0.038	0.294
Number of siblings	0.007	1.007	0.001	0.027
Gender	0.043	1.044	0.005	0.146
Community frequency of students in multigrade classrooms	-0.009*	0.991	-0.001	0.004
RPS participation "Acceptance"	-1.058**	0.347	-0.139	0.170
Number of cases		1542		
Pseudo likelihood		-655.6		
Wald chi2(13)		65.37**		
Pseudo R2		0.0451		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .15052043

Although the results are encouraging, the R-squared measures on the absenteeism regressions are rather low, indicating that the variables selected do not explain many of the variations seen in absenteeism. Using the community level model on the comcens data, the RPS program still showed a positive impact on absenteeism with much better fitting models. For the community model, the average number of days missed per community was used as the dependent variable, and the model was analyzed using a linear regression. At baseline, none of the variables was significant, indicating that there was really no relation between attendance and any of the other factors considered. The model itself was also not significant.

Table 34
Community model. Baseline. Effect of RPS on attendance.

	Attendance	
	B	S.E. (Robust)
Ln Average total spending per capita	11.398	24.629
Mean Hours worked last week	-4.364	4.868
Age	-38.497	194.468
Age-squared	1.068	9.793
Community mean school distance	-0.100	0.561
Mean Mother's educational level	-10.598	11.041
Average % mother present in home	-0.309	0.812
Number of siblings	11.152	7.984
Community frequency of students in multigrade classrooms	0.155	0.273
RPS Treatment or Control	6.143	6.269
Number of cases	42	
F	1.41	
R Square	0.222	

Notes: *Significant at 5% level, ** significant at 1% level.

At the end of the program, the model was significant at the 5% level. Further, participating in the program yielded a significant

difference in attendance, with RPS participant communities showing about 14% fewer students reporting absences the previous month.

Table 35
Community model. End of Program (2002). Effect of RPS on attendance

	Attendance	
	B	S.E.
Ln Average total spending per capita	8.879	7.486
Mean Hours worked last week	-0.387	1.851
Age	-5.787	93.275
Age-squared	0.382	4.609
Community mean school distance	-0.025	0.034
Mean Mother's educational level	-4.239	4.211
Average % mother present in home	-0.295	0.388
Number of siblings	-4.804	4.352
Community frequency of students in multigrade classrooms	-0.093	0.087
RPS Treatment or Control	-13.698**	3.944
Number of cases	42	
F	2.57*	
R Square	0.383	

Notes: *Significant at 5% level, ** significant at 1% level.

Retention Rates

The RPS household survey allowed for the classification of respondents as first-time enrollers in whichever grade they were presently enrolled, or as repeaters. The specific question was (translated): "first time in current grade?" and if not, how many times a participant had been in that grade. For simplicity, in this study the repetition dummy variable was used, but not the number of times repeating. At baseline, of the valid responses to the question, 88% of students responded that this was the first time they had been in the current grade, leaving a retention rate of 12%.

For both the total sample and males by themselves, the percentage of students repeating a grade *increased* for the control group from 2000-2002. For females this was not the case; retention rate fell over the period. However, for males and females, the retention rate for RPS participants fell over the course of the implementation, such that the treatment group achieved a significantly lower retention rate in 2002. This finding suggests that the program had positive results on retention, which is not especially surprising given its effect on attendance and the effects that attendance should generally have on promotion.

Table 36
Retention rate (First Time in Current Grade), 2000-2002

		Control	Treatment	Difference (T – C)
Total				
	Baseline (2000)	13	12	-1
	After RPS (2002)	15	8	-7**
Male				
	Baseline (2000)	12	13	1
	After RPS (2002)	16	8	-8**
Female				
	Baseline (2000)	11	10	-1
	After RPS (2002)	11	6	-5**

To further explore the program effects on retention, logistic regression models were run before and after the program using the variables used for other models.

Table 37
Individual Model. Baseline. Effect of RPS on Retention.

	Retention			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	-0.238	0.194	-0.025	0.79
Community mean (ln per capita educational expenditure)	0.176	0.262	0.018	1.19
Work dummy	-0.474	0.321	-0.058	0.62
Age	-0.220	0.465	-0.023	0.80
Age-squared	0.007	0.024	0.001	1.01
Secondary Expectations	0.542**	0.188	0.055	1.72
Community mean school distance	-0.001	0.002	-0.000	0.10
Mother's educational level	0.022	0.052	0.002	1.02
Mother present	0.249	0.424	0.028	1.28
Number of persons siblings	-0.007	0.038	-0.000	0.10
Gender	-0.076	0.190	-0.008	0.93
Community frequency of students in multigrade classrooms	-0.010	0.010	-0.001	0.10
RPS participation "Acceptance"	0.111	0.269	0.012	1.12
Number of cases		1291		
Wald chi2(13)		23.06*		
Pseudo R2		0.0265		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .88185935

At the end of the program, the coefficient on participation was not significant. This might be in part due to the large effects shown by the other variables. Being female, having a higher percentage of multigrade classrooms within a child's community, and being older all decreased the chances of being in the current grade for the first time or increased the probability of retention. As with absenteeism, the R-square terms of the retention models were very low. It is quite possible that this reflects the fact that attendance and retention are

more dependent on school quality, teacher choices and other school-level variables than is initial enrollment.

Table 38
Individual Model. End of Implementation (2002). Effect of RPS on Retention.

	Retention			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.087	0.156	0.008	1.09
Community mean (ln per capita educational expenditure)	-0.017	0.244	-0.002	0.98
Work dummy	-0.397	0.267	-0.038	0.67
Age	-2.771**	0.713	-0.229	0.06
Age-squared	0.143**	0.037	0.012	1.15
Secondary Expectations	-0.207	0.209	-0.017	0.81
Community mean school distance	0.001	0.002	0.000	1.00
Mother's educational level	0.083	0.070	0.007	1.09
Mother present	0.580	0.327	0.059	1.79
Number of siblings	0.022	0.033	0.002	1.02
Gender	-0.476**	0.177	-0.040	0.62
Community frequency of students in multigrade classrooms	-0.020**	0.007	-0.002	0.98
RPS participation "Acceptance"	0.480	0.298	0.040	1.62
Number of cases		1542		
Wald chi2(13)		49.01**		
Pseudo R2		0.0753		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .90926765

The model fit for the community regression was better than for the individual regression. Retention rates were used as the dependent variable and linear regression was used to measure impact. The R-Square and Adjusted R-Square at baseline were very low, the model insignificant, and none of the individual variables significant, again indicating basically that retention rates are almost perfectly random or not at all well explained by any of the variables chosen in this model.

At the end of the program, however, the R-Square terms were acceptably high, the model significant at the 1% level, and program participation significant at the 5% level (t =0.015). RPS appears to have lowered the retention rate in RPS communities by 6% over that of control communities.

Table 39
Community model. Baseline. Effect of RPS on retention.

	Retention	
	B	S.E.
Ln Average total spending per capita	13.897	11.450
Mean Hours worked last week	1.177	2.566
Age	-24.187	87.194
Age-squared	0.944	4.441
Community mean school distance	-0.019	0.024
Mean Mother's educational level	-1.390	3.385
Average % mother present in home	0.028	0.292
Number of siblings	1.490	4.421
Community frequency of students in multigrade classrooms	0.183	0.119
RPS Treatment or Control	-1.070	3.844
Number of cases	42	
F	0.65	
R Square	0.118	

Notes: *Significant at 5% level, ** significant at 1% level.

Table 40
Community model. End of Program (2002). Effect of RPS on retention.

	Retention	
	B	S.E.
Ln Average total spending per capita	8.578	5.310
Mean Hours worked last week	-2.207**	0.731
Age	156.63	70.265
Age-squared	-7.860*	3.487
Community mean school distance	-0.027	0.022
Mean Mother's educational level	-1.147	2.641
Average % mother present in home	-0.000	0.240
Number of siblings	-2.551	3.565
Community frequency of students in multigrade classrooms	0.134	0.076
RPS Treatment or Control	-6.257*	2.421
Number of cases	42	

F	7.42**
R Square	0.473

Notes: *Significant at 5% level, ** significant at 1% level.

Schooling Expectations

Dummy variables were created for the major educational levels: primary school, secondary school, and university. At baseline, there was no significant initial difference in expectations. No other variables proved significant. Unlike the other variables, the model after the program also did not reveal any significant difference in secondary expectations. The program seems not to have had much effect in this area. This was not however, a goal of the program, and so might not have been as scrupulously recorded as it could have been. It is possible that greater results could be extracted through greater focus on this area of the survey or through greater focus within such a program on increasing expectations.

Additionally, in looking at the table of frequencies for schooling expectations before and after, it appears that both control and treatment groups increased by about 3% in the percentage of students who expected to reach secondary school. The lack of significance was most likely diminished by the fact that both groups showed improvement in secondary expectations.

Table 41
Frequency of schooling expectations before and after RPS implementation

	Control		Treatment	
	Baseline	After	Baseline	After
Primary	25%	21%	24%	19%
Secondary	45%	48%	41%	44%
University	26%	27%	30%	27%

Table 42
Individual Model. Baseline. Effect of RPS on schooling expectations.

	Schooling expectations			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	-0.076	0.160	-0.019	0.93
Community mean (ln per capita educational expenditure)	-0.157	0.247	-0.038	0.85
Work dummy	0.106	0.252	0.026	1.11
Age	-0.155	0.329	-0.038	0.86
Age-squared	0.008	0.017	0.002	1.01
Community mean school distance	0.002	0.002	0.001	1.00
Mother's educational level	-0.058	0.041	-0.014	0.94
Mother present	-0.150	0.284	-0.037	0.86
Number of siblings	-0.006	0.033	-0.001	0.99
Gender	-0.014	0.119	-0.004	0.99
Community frequency of students in multigrade classrooms	0.002	0.006	0.001	1.00
RPS participation "Acceptance"	-0.348	-0.348	-0.085	0.7
Number of cases		1291		
Wald chi2(13)		17.42		
Pseudo R2		0.0161		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .42532303

Table 43
Individual Model. End of Implementation (2002). Effect of RPS on schooling expectations.

	Schooling expectations			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	-0.085	0.135	-0.021	0.918
Community mean (ln per capita educational expenditure)	-0.029	0.226	-0.007	0.971
Work dummy	0.400	0.341	0.099	1.492
Age	-0.145	0.224	-0.036	0.865
Age-squared	0.006	0.011	0.001	1.006
Community mean school	0.002	0.002	-0.001	0.998

distance				
Mother's educational level	-0.015	0.041	-0.004	0.985
Mother present	0.001	0.275	0.002	1.001
Number of persons in household	0.043	0.032	0.011	1.044
Gender	0.098	0.104	0.025	1.103
Community frequency of "multigrd"	-0.002	0.009	-0.000	0.998
RPS participation "Acceptance"	-0.149	0.305	-0.037	0.862
Number of cases		1542		
Wald chi2(13)		13.45		
Pseudo R2		0.0125		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = .47760463

Summary of Findings

Despite the high poverty and low initial educational outcomes experienced in Nicaragua, the RPS program showed overall an extremely positive impact on schooling outcomes, both at the individual and community levels. The particular model chosen appeared most applicable to enrollment, but enrollment, retention and attendance all demonstrated good model fit at the community level, indicating that the selection of variables was well justified. RPS participants were far more likely to be enrolled in school, as well as to attend school more often and be held back less. Of the outcome variables tested, only schooling expectations showed less of an effect than might be hoped. This is likely due, however, to a similar increase in non-program participants rather than the lack of increase in the treatment group.

Of the other variables besides program acceptance, opportunity cost and returns to schooling (the work and age variables), as well as

income and mother's education, proved to be very important for predicting enrollment at the individual level. The greatest effect resulted from whether a child was working or not. For the other outcome variables, significant independent variables were fewer in number and varied from model to model, making it more difficult to make broad generalizations. Although secondary expectations were not informative in Nicaragua, comparison with Colombia is informative. The results of those regressions were presented for that purpose. Implications of these results will be discussed in the final chapter of this dissertation.

CHAPTER 6: COLOMBIAN DESCRIPTIVE STATISTICS & FINDINGS

BASELINE DESCRIPTIVE STATISTICS

Household and individual level data

As described in the discussion of program targeting, within qualifying municipalities all households registered under SISBEN1 were eligible. The treatment group was drawn from the SISBEN1 households within eligible municipalities, and then control municipalities were chosen to match the treatment group. For the current study, the treatment variable was created by matching the municipality control status to households and individuals. Overall, at baseline there were roughly 50% each of control and treatment at the individual, household and community levels. When divided into age groups, the targeted 7-17 year-olds had a greater proportion of treatment individuals, approximately 60%.

By the end of the pilot program, more of the municipalities had received treatment, so the percentage of control households and individuals was lower.

Table 44
Numbers and Percentages of Control and Treatment at Start of Program

	control		Treatment "with pay"		Treatment "without pay"	
Individual (N = 68,608)	28,268	50%	20,753	30%	19,587	29 %
Ages 7-17(23,793)	9877	42 %	7165	30%	6751	28 %
Household (N = 11,462)	4689	41 %	3558	31%	3215	28%
Community (municipality) (N =122)	65	53%	28	23%	29	24%

Table 45
Numbers and Percentages of Control and Treatment at end of Program

	Control		Treatment	
Individual (N = 57,411)	17,314	30%	40,097	60%
Ages 7-17 (13,116)	5400	41%	7716	59%
Household (N = 9,566)	2890	30%	6676	60%
Community (municipality) (N = 122)	52	43 %	70	57 %

Family and community level characteristics and parental preferences

Many more households and individuals participated in the Colombian program than in the Nicaraguan RPS. As in Nicaragua, the average number of members per household was six, but there was a larger range, from a single member to 28. Within those households, the average number of children between the ages of 7 and 17 was also calculated. Families averaged three children within this age range, but as depicted in the figure, all points of the distribution of children between 1 and 5 represent a substantial number of cases.

Figure 7. Number of children per household aged 7-17, Colombian sample.

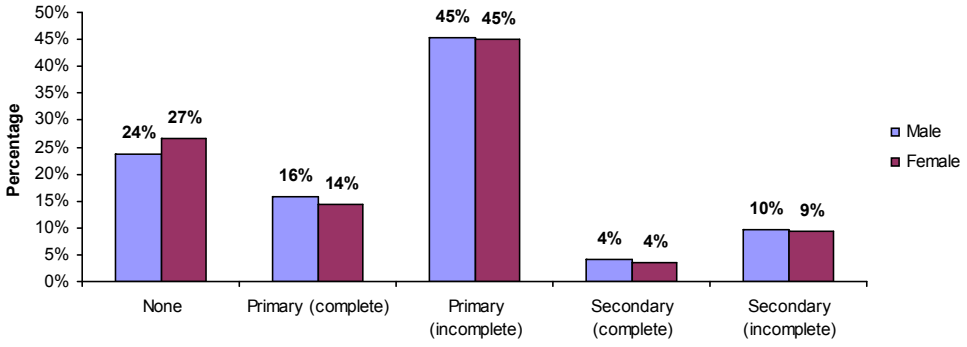
Literacy and schooling characteristics

As in Nicaragua, literacy information was gathered via self-reporting by respondents. Each was asked the simple questions, "Can you read?" and "Can you write?" Following the literacy trends countrywide (Appendix 4), a much higher percentage of individuals over 25 in the Colombian sample were literate than in Nicaragua, with males reporting approximately 5% greater literacy. Despite the slight difference in literacy between the genders, educational attainment for the population over 25 was almost identical for males and females. The majority of adults had completed some primary school but had not finished. One quarter of adults had been exposed to no schooling at all, about half as many as in Nicaragua.

Table 46
Gender comparisons for select demographic characteristics, baseline, Over 25

	Total %	Male %	Female %
Literacy, Over 25 N = 24,464			
Can read	70.0%	72.4%	67.3%
Can write	73.1%	71.5%	67.5%
Level of Schooling Attained N = 24,464			
None	25.1%	23.8%	26.5%
Preschool	0.1%	0.1%	0.1%
Primary (complete)	15%	15.7%	14.2%
Primary (incomplete)	45.1%	45.4%	44.9%
Secondary (complete)	3.8%	4%	3.5%
Secondary (incomplete)	9.5%	9.6%	9.4%
Technical (All Levels)	0.4%	0.4%	0.3%
University	0.5%	0.5%	0.3%

Figure 8. Schooling attainment by gender, over 25



The variable for mothers' educational attainment was created similarly for Colombia as Nicaragua. A separate table was created for women who had identified themselves as household heads[34] or

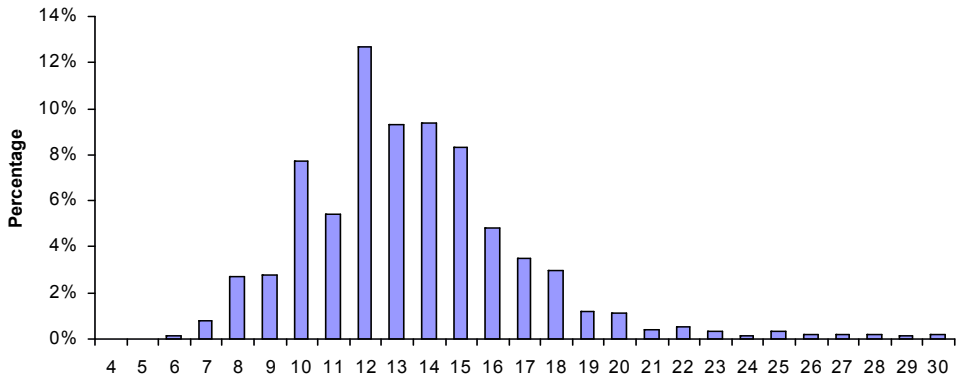
[34] 22% of household heads were identified as women. Although not a focus of the study, some research has suggested that households headed by women are more

spouses. Their educational attainment was then matched back to the data set for children 7-17 as the variable mother's educational attainment. The distribution for mothers' educational attainment is nearly identical to that of females as a whole. All unenrolled individuals were also asked at what age they had left school. The majority of mothers had left between the ages of 10 and 15, with a peak at the age of 12. This latter variable performed better in the regressions, so was used in the regression analysis.

Table 47
Mothers' educational attainment by level

	Frequency	Percentage
None	3426	22.9%
Primary (complete)	2433	16.3%
Primary (incomplete)	7114	47.6%
Secondary (complete)	443	3.0%
Secondary (incomplete)	1349	9.0%
Technical (All Levels)	32	0.2%
University	15	0.1%

Figure 9. Age mother left school



likely to be poor (Skoufias, 2001). Additional research might focus on how female-headed households are faring under the program.

Income/consumption

The household head provided detailed expenditure information for the entire family in a number of categories. For purpose of analysis, the reported total average monthly expenditure was used.[35] In order to calculate expenditure in current dollars, the average in cordobas was first converted to US dollars using the exchange rate for the year in question.[36] It was then adjusted for inflation using the United States consumer price index. At baseline, the average monthly expenditure was US $55. This means that on average, the sample contains families living on less than $2 a day. Considering inflation, the overall average monthly expenditure was approximately $30 higher by the end of the program.

Table 48
Average monthly expenditures, all households (N = 11,448), Córdobas and 2009 US$

	Baseline		End of program	
	Mean	Standard error	Mean	Standard error
Total monthly expenditure	182,290	1128.17	224,312	1107.69
Total monthly expenditure (current dollars)	$55.00	-	$89.00	-
Total monthly per capita expenditure (pesos)	33,406	222 .99	38,788	252.77
Total monthly per capita expenditure (current dollars)	$9.99	-	$15.45	-

[35] Detailed weekly expenditure was also calculated in 2003 using the detailed listing, but when multiplied to create the monthly total only differed from the estimated monthly total by $5-$7.
[36] Source: CIA factbook, 2008.

Baseline measures, Student-aged population

Enrollment

At baseline (2003), 82% of children ages 7-17 were enrolled in school, with approximately two-thirds in primary school and one-quarter in secondary. Children were asked how many students were in their classrooms. The average number of students per class was 30 at baseline, but ranged from 3 to a reported maximum of 70. Although some school data was collected, inconsistencies in the data made it difficult to match the school to the individual child. In the below regressions, the average number of students per community was calculated from the students' self-reporting of number of children in their classrooms.

Table 49
Levels of schooling for enrolled children, baseline (2003) Colombia

	Frequency	Percentage
No schooling	257	1%
Preschool	346	2%
Currently in primary	12,147	68%
Completed primary	423	2%
Currently in secondary	4657	26%

The tables and figures for enrollment by age and distribution of grade by age at baseline indicate that peak enrollment occurred around the age of 9, and began to fall off rapidly after age 11. This mirrors the information collected for mothers above, indicating that the highest number of individuals left school at the age of 12.The age at which overall unenrollment surpassed that of enrollment was three years later than in Nicaragua, at age 17. Unlike in Nicaragua, where

the highest number of students was concentrated in the first grade, the highest number of students in Colombia was concentrated in the second grade. As in Nicaragua, there was a higher variability in the ages of students found within each grade than one generally expects in developed countries, and the age at which children entered first grade was later.

Figure 10. Percent enrollment by age.

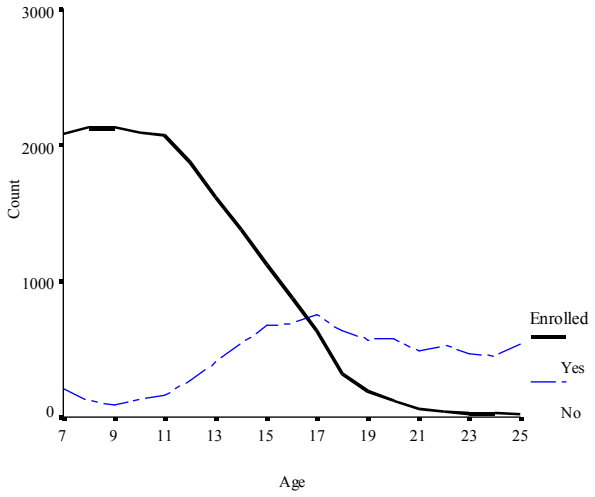
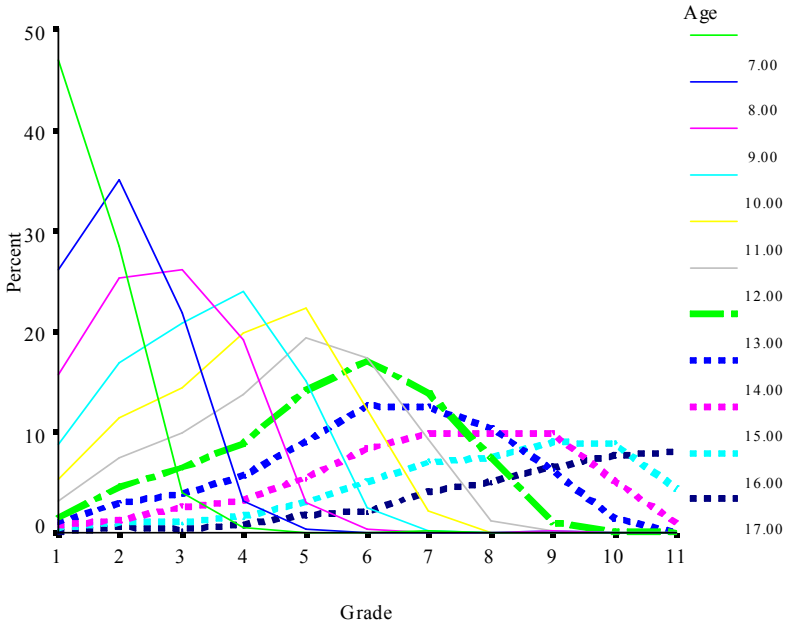


Table 50
Distribution of enrollment by grade and age (seven to 17), Baseline (2003)

	Grade											
Age	1	2	3	4	5	6	7	8	9	10	11	**Total**
7	1146	692	98	12	2	1	3				1	2059
8	631	845	527	75	8			1	1		1	2128
9	369	596	616	452	70	7			2	1		2132
10	208	396	493	564	356	57	5	1	3			2092
11	123	269	337	466	521	286	50	1	1		1	2064
12	71	168	225	310	435	393	210	25	5			1854
13	32	98	139	192	304	368	299	160	22	1		1627
14	22	61	79	117	186	260	256	215	127	29	1	1366
15	14	25	49	63	106	162	191	191	191	100	19	1121
16	8	18	18	29	53	89	123	131	158	155	77	867
17	1	9	5	13	29	35	67	83	107	127	132	623
Total	**2625**	**3177**	**2586**	**2293**	**2070**	**1658**	**1204**	**808**	**617**	**413**	**232**	**17933**

Figure 11. Distribution of enrollment by grade and age (seven to 17), Baseline (2003)



Reasons for non-enrollment

As in Nicaragua, those who were not enrolled were asked the reason for their nonenrollment. In Colombia, however, respondents could offer more than one answer. For each option, respondents answered yes or no to indicate whether this was a major factor preventing them from being enrolled in school. The most frequently reported answers are presented in the table below.

Table 51
Reasons for non-enrollment by gender, Baseline

	Total	Male	Female
Cost	58%	55%	63 %
Work	19%	23%	12 %
No school nearby	7%	6%	8 %
Do not like to study	30%	36 %	20 %
Domestic labor	16%	15 %	18 %

As in Nicaragua, and consistent with the theory that motivated conditional cash transfer programs, the most frequently stated reason for not being enrolled in school was the cost of schooling. This sentiment was expressed even more often in Colombia than it had been in Nicaragua, but the wording of the economic response was slightly different between the two countries. In Nicaragua, the response was "economic problems," whereas in Colombia it was "cost," presumably of schooling itself. It is possible that the more general "economic problems" framing of the response did not fully translate to respondents as meaning the cost of schooling itself. The inability to choose more than one option in the Nicaraguan case undoubtedly affected the response to this question. Whereas in Nicaragua work was the next most frequently offered reason, in Colombia that response ranked third, after expressed dislike of studying. It is possible that this increase in dislike of study in the Colombian sample is due to the presence of older children.

Absenteeism and retention

Attendance rolls were not available with the data for *Familias en Accion*. Children were asked whether they had missed any days the previous month. If they had, they were then asked to estimate the number of days missed. At baseline (2003), of the students who were enrolled, 75% reported perfect attendance - not having missed any days of school the preceding month. Of those that had missed some days, the average was 3, with the great majority missed due to illness. The full range of possible reasons and their frequency of reportage are presented below. As with the other measures, the stated incidence of perfect attendance was higher than for Nicaragua.

Table 52
Major reasons for missing school, 2003

	Frequency	Percentage
Illness	2663	59%
Did not want to go	375	8%
Work	59	1%
Housework	174	4%
Lack of money for classes	217	5%
Cancellation of class	214	5%
Other	831	18%

Returns to schooling

The most meaningful measure of returns to schooling in the Colombian dataset was schooling expectations. A beneficial innovation in the Colombian evaluation survey was to distinguish between the level of schooling desired and the level of schooling that students expected to achieve. There was a striking disparity between the

expectations and desires of both males and females at the start of the program. While most students of both genders stated that they expected to complete primary or secondary school, approximately 39% of males and 46% of females expressed a desire to attend university. It is important to note that secondary expectations were much higher in Colombia than in Nicaragua, by nearly 20%, representing a much higher perceived return to schooling in that country. It is also evident from the table that male and female expectations were quite similar.

Table 53
Schooling Expectations & Desires, baseline

	Male		Female	
	Expect	Desire	Expect	Desire
Primary	28%	10%	25%	7%
Secondary	60%	48%	62%	46%
University	9%	39%	11%	46%

Direct costs: school fees and expenditures

Very similarly to the Nicaraguan evaluation, each respondent age 7 or above who was enrolled in school was asked to estimate school-related expenditures in a number of categories. Unfortunately, unlike the Nicaraguan case, the detailed expenditure information completed by household heads did not include a good summary measure of educational expenditures for the entire household. In the regressions below, the self-reported educational expenditure data was aggregated to the community level, and then matched back to each child aged 7 to 17.

Table 54
School Costs and Amounts per student, Descriptive statistics

	Reported Annual Mean	Median	2003 US$	2009 US$	Monthly 2009 US$
Enrollment fee	19,377 (213.17)	10,000	$6.73	$5.79	$0.48
Transportation	3055 (237)	1000	$1.06	$0.91	$0.08
Uniform	41,846 (346)	32,000	$14.54	$12.51	$1.04
Supplies	19,824 (150)	15,000	$6.89	$5.93	$0.49
Books	22,392 (584)	14,000	$7.78	$6.70	$0.56
Total	45,520 (379)	27,000	$15.82	$13.61	$1.13

As presented in the table on school costs, transportation is by far the lowest expenditure. Eighty eight percent of students in the pilot communities were able to walk to school.[37] Uniforms and books comprised the next two largest categories of expenditure. As mentioned in the section describing the Colombian context, although education is supposed to be free, it is legal for schools to charge enrollment fees and uniforms are required nearly across-the-board. The distribution of school related costs, then, is not surprising. The average total expenditure for education was approximately 2% of total household expenditure. In addition to the reported annual costs, some

[37] Of the remaining students, 5% traveled via non-motorized private transportation, presumably bicycle or donkey, 3% via public transportation, and 2% each by private car or school - provided transportation.

students reported costs for rent, photocopies or food served in school. Only the core annual costs were used in the regression analysis.

If one assumes that the estimate above accurately reflects the annual cost of schooling, the 12,000 pesos per primary school enrollee and 24,000 pesos per secondary enrollee per month should have more than covered the educational costs. The extent to which the annual stipend amount exceeded the stated annual educational expenditures, however, either indicates that there are categories missing from the survey that comprise large amounts of educational spending or that students underreported expenditures. Given the ages of the students in question, this is a definite possibility. The reported annual costs in Colombia were similar in magnitude to those in Nicaragua, with the total cost about $2 higher, as measured in current dollars.

Opportunity cost: Trade-off between work and schooling

In the Colombian survey, all individuals aged seven or above were asked which activity had occupied the majority of their time the preceding week. The three most commonly reported activities were work, household affairs and study. There was no distinction made between domestic labors and running a business out of the home. As apparent from the below table, males were almost twice as likely as females to have worked, and less than a third as likely to have spent the majority of their time on household affairs. Interestingly when compared with the disparities in the other two categories, the proportion of males and females who spent the majority of their time

studying was almost equal. We can infer from this and the other schooling data that while schooling outcomes are similar between the genders, time outside the classroom is spent very differently.

Table 55
Percentage of individuals stating study, work and housework as major activities by gender, Baseline (2003)

	Male	Female
Worked	40%	22%
Household affairs	8%	33%
Studied	33%	35%

Graphing these three domains by age on the same axis, it appears that study remains the primary activity until the age of 14, and then is surpassed by both housework and work. Since enrollment is still high at age 14, it is likely that even those students who were in school had to devote a significant amount of time to work and/or household affairs. For the total population as well as for females, the proportion of children reporting responsibilities outside school increased steadily with age, with no clear preference for work inside or outside the home. For males, however, the percentage of work done inside the home exceeded that done outside the home until age 15. After that, work outside increased precipitously while work within the household declined.

Figure 12. Percentage of individuals stating study, work and housework as major activities

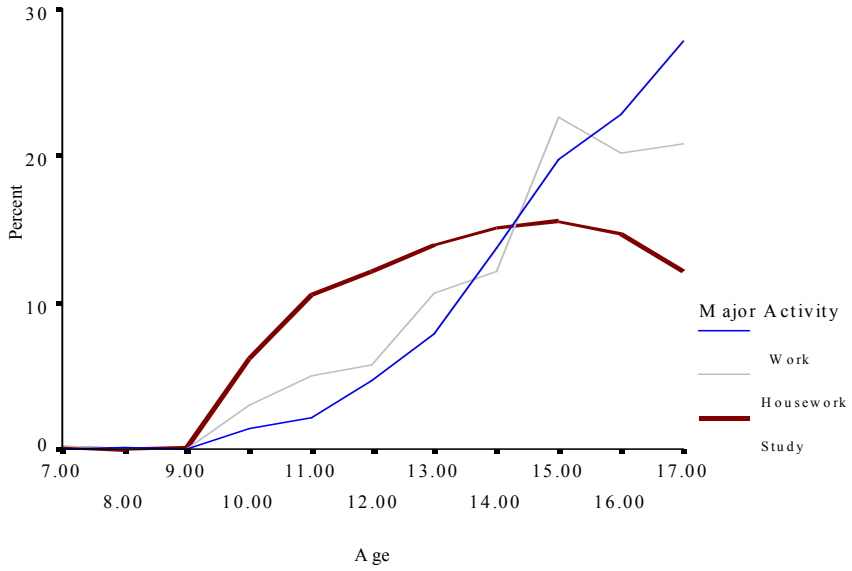


Figure 13. Percentage of females stating study, work and housework as major activities

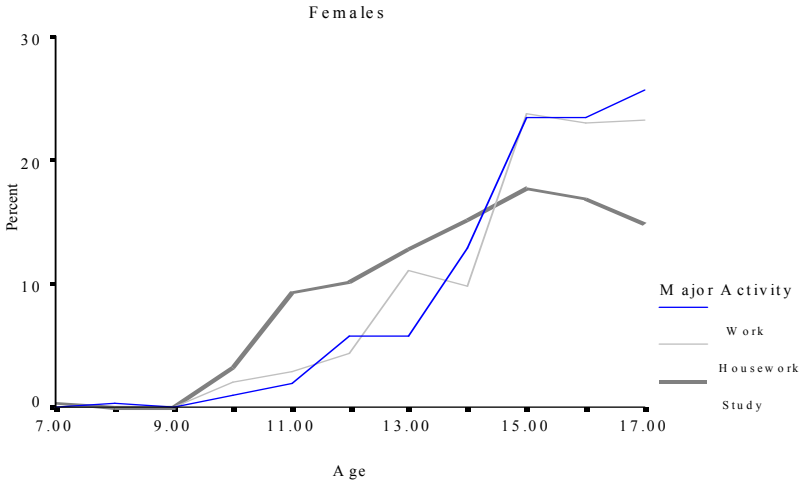
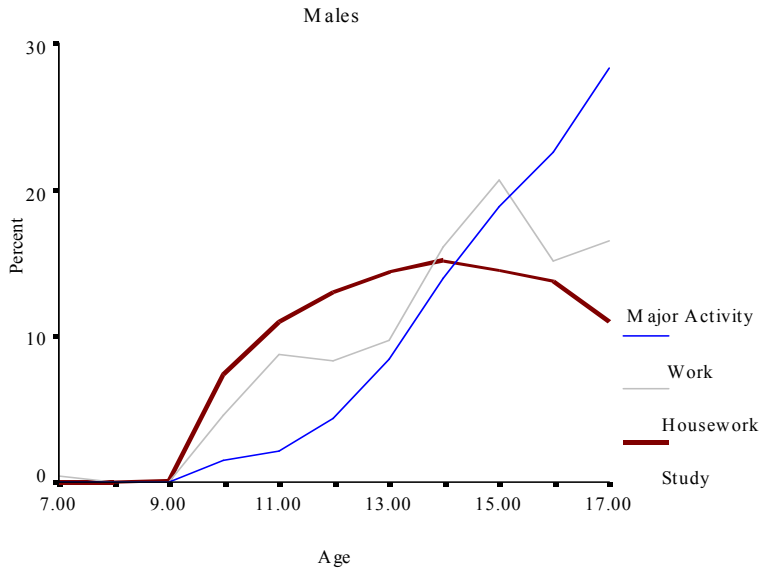


Figure 14. Percentage of males stating study, work and housework as major activities



Summary of baseline characteristics for student-aged population

Literacy and schooling attainment at the start of the program were much higher than in Nicaragua, yet clearly not universal. Of those school-age children who were not enrolled, cost was the major reason, followed by disinterest and work. The targeted population had desires and aspirations for schooling that exceeded those of the over-25 portion of the sample, with the vast majority expecting and desiring to attend secondary school or university. Although there were not large differences between males and females in literacy or schooling at any age, more girls did desire to enter university. This is likely due to greater job opportunities for boys who complete primary or secondary

school, and the resultant greater opportunity cost of school for boys. Given the information on total expenditures and expenditures for schooling, the educational stipend seems generous enough to cover a substantial percentage of the cost of schooling, so should be a sufficient incentive to maintain enrollment and attainment among eligible participants.

FINDINGS

As previously mentioned, the timing of the data collection for the baseline survey poses some problems for the interpretation of the findings. Evaluators asserted that the program had begun in one-third of the localities before the baseline measurement was taken. In order to somewhat make up for this, they included some retrospective questions on the survey for enrollment and attendance. They asked students whether they had been enrolled for each of the previous two years as well as what grade they were in and approximately how many days of school they had missed. In the original impact evaluation, the evaluators used these retrospectives measures as the 'true' baseline, and then attributed any differences in 2003 to the program.[38]

Where possible, the regressions below were run for the retrospective responses given regarding the 2001 calendar year. In those cases, the only variable that differed from the 2003 model was the dependent variable itself. It is thought that many of the other

[38] The evaluators compared treatment groups that had already received benefits with treatment groups that had not begun receiving benefits.

variables are relatively constant. In any case, there was no full dataset for years before 2003.

Enrollment

For the test of program effect on enrollment at the individual level, a logistic regression very similar to that in Nicaragua was created with enrollment as the dependent variable:

Probability (Enrolled) = β1(age mother left school) + β2(number of children) + β3(gender) + β4(ln per capita total expenditure) + β5(community mean number of students per classroom) + β6(community mean ln per capita educational expenditure) + β7(work dummy) + β8(age) + β9(age squared) + β10(secondary expectations) + β11(participation)

This same model was used for absenteeism and retention, as well as for the effect on secondary expectations, though in that case, secondary expectations were dropped from the independent variable list. This model is nearly identical to that in Nicaragua with the exception of the missing variable for mother's presence in the home. This variable was not available in the Colombian data. Because it had very little effect in the Nicaraguan data, its absence is not thought to greatly affect the Colombian results. The treatment variable here stands for participation in the program, and was coded 0 for the control group and 1 for both the "*tratamiento con pago*" (treatment

with pay) and "*tratamiento sin pago*" (treatment without pay) groups.[39]

Based on children's responses, there was no significant difference in enrollment between the treatment and control groups in 2001, before the program started. By the time that the intended baseline measurement was taken, however, the treatment group already showed a significantly higher enrollment rate. Upon closer observation, it seems that the greater difference between control and treatment in 2003 was due mainly to a six- point drop in enrollment within the control group. The change in enrollment for both groups between the 2003 measurement and the final measurement in 2006 was minimal. It appears that for enrollment, the program functioned not as much to increase enrollment for the treatment group as to prevent the decline that occurred for other students.

[39] The regression in 2003 was also run with "treatment with pay" coded as the only treatment group and "treatment without pay" coded as control. . The coefficients were nearly identical. . The coding reported in this analysis reflects the belief that once families are enrolled in the program, whether or not they have received benefits, they will behave as program participants.

Table 56
Percent enrollment in 2001, at baseline (2003) and end of program by treatment group

	Control %	Treatment %	Difference %[40]
2001 (retrospective)	83.0%	85.2%	2.2%
Baseline	77.0%	84.7%	7.7%**
Difference between 2001 and 2003	*-6.0%*	*-0.5%*	*5.5%*
After *Familias en Acción*	76.9%	84.5%	7.6%**
Difference between 2001 and 2006	-6.1%	*-0.7%*	*5.4%*

Plotted by age, it is evident that in 2003, program participants enrolled with a higher frequency than control participants at every age, and that the gap between them widened for older children. By the age of 17, there was a 12% difference in enrollment between the two groups. Focusing only on the older children by gender, it appears that much of the overall difference resulted from increased enrollment for boys. Up until the age of 17, girls' enrollment was constant between the control and treatment groups. It was also quite a bit higher than that of boys at all ages.

[40] Chi-square test was performed to determine significance: r (2001) = 10.8, df = 1; r (2003) = 137.1; df = 1

Figure 15. Enrollment by age and treatment group, 2003[41]

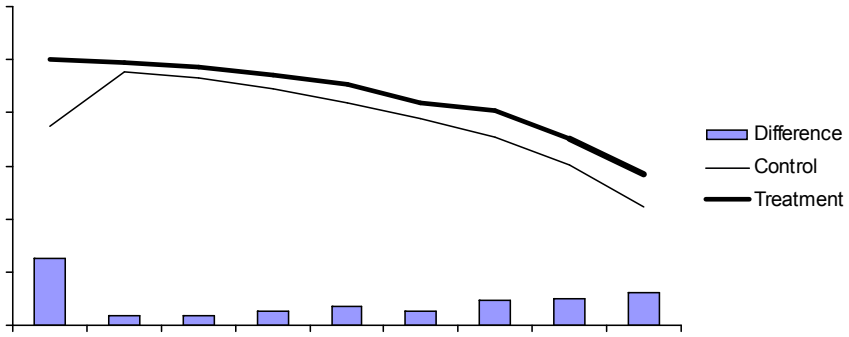


Table 57
Baseline (2003). Enrollment by age and treatment group

Age	N	Control	Treatment	Difference
9	26	75	100	25
10	1015	95	99	4
11	1839	93	97	4
12	1877	89	94	5
13	1829	84	91	7
14	1796	78	84	6
15	1734	71	81	10
16	1583	60	70	10
17	1391	44	57	12

Table 58
Baseline (2003). Enrollment by Gender, Age and Treatment Group – older children only

	Male		Female	
Age	Treatment	Control	Treatment	Control
14	75	72	85	85
15	71	64	73	74
16	63	64	73	74
17	55	49	69	55

[41] The question corresponding to this information was only asked of children ages 10 and above.

Using a logistic regression model in 2003 and 2006, as well as the retrospective enrollment measure to determine program effect in the presence of other variables, the similarity of enrollment rates in 2001 was confirmed; the treatment variable was not significant. Several of the other variables were significant, however: mother's education, gender, per child household expenditure, work, age and secondary expectations. The community average number of students per classroom was significant at the 5% level. Of these, per capita household expenditure, work and secondary expectations showed the largest effects, with expenditure and expectations each increasing the probability of enrollment by 15%. This is in contrast to the Nicaraguan data, where secondary expectations had very little effect. This may well be due to the fact that the Colombian data included older students, for whom the prospect of secondary school would be a lot more relevant. The model overall was also significant, and the R squared term suggests that this is an acceptable model for enrollment in the Colombian context.

Table 59
Individual Model. 2001. Effect of *Familias en Acción* on Enrollment.

	Enrollment			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.150*	0.063	0.147	1.162
Community mean ln per capita educational expenditure	0.049	0.239	0.050	1.050
Work dummy	-0.854**	0.102	-0.112	0.426
Age	-0.742**	0.283	-0.074	0.476
Age-squared	0.012	0.010	0.001	1.012
Secondary expectations	1.245**	0.114	0.146	3.472
Age mother left school	0.036**	0.005	0.004	1.037
Number of siblings	-0.043	0.033	-0.004	0.958I'd
Gender	-0.253**	0.062	-0.025	0.777
Community mean number of students per classroom	0.755*	0.323	0.076	2.2127
Program participation (treatment)	0.245	0.158	0.026	1.278
Number of cases		10,157		
Wald chi2(11)		936.21**		
Pseudo R2		0.205		

Notes: *Significant at 5% level, ** significant at 1% level.
y = Pr(enrolled) (predict) = 0.88723283

In 2003, there was a significant difference in enrollment between program participants and nonparticipants. Program participation increased the probability of enrollment by approximately 10%. The other significant variables were largely similar to those significant for 2001, but the marginal effects were higher. Work and secondary expectations were particularly high, with work decreasing the probability of enrollment by 22% and the expectation of secondary school increasing the probability of enrollment by 23%. The R-squared

term on this model was slightly higher, which is not especially surprising since all of the data used for both models came from 2003, so should more accurately reflect the outcome in 2003 than the outcome in 2001.

Table 60
Individual Model. 2003 (Baseline). Effect of *Familias en Acción* on Enrollment.

	Enrollment			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.128*	0.059	0.155	1.137
Community mean ln per capita educational expenditure	-0.059	0.149	-0.074	0.943
Work dummy	-1.264**	0.117	-0.217	0.283
Age	-1.041**	0.240	-0.128	0.353
Age-squared	0.020	0.009	0.002	1.020
Secondary expectations	1.565**	0.120	0.225	4.783
Age mother left school	0.040**	0.005	0.005	1.041
Number of siblings	-0.041	0.025	-0.005	0.960
Gender	-0.357**	0.061	-0.043	0.699
Community mean number of students per classroom	0.397	0.250	0.049	1.488
Program participation (treatment)	0.703**	0.139	0.098	2.020
Number of cases		10,832		
Wald chi2(11)		1126.28**		
Pseudo R2		0.277		

Notes: *Significant at 5% level, ** significant at 1% level.
y = Pr(enrolled) (predict) = 0.85634172

Between 2003 and 2006, the survey changed in a number of ways. The change with the most significant effect for the study was in the recording of secondary expectations. First, whereas in 2003 every child between the ages of 7and 17 was asked what level of schooling he or she desired and expected to attend, in 2006 only primary school children were asked; and of those, only the oldest child within each

family was asked. Second, instead of asking what level of schooling the child wanted to reach, the questions involved expected earnings of the child and the child's children. Most importantly, the question was not asked of unenrolled children. Since enrollment is a dummy variable, having no values where enrolled = 0 is not possible; community mean expectation had to be used. Here it represents the community average expected probability of graduating from secondary school.[42]

At the end of the pilot phase, the treatment variable was still significant, though the treatment effect had diminished. Program participation increased the probability of enrollment by 6%. Few of the other variables were significant. Household per capita expenditure and work continued to show the greatest effect on enrollment, eclipsing even program participation. One unit greater expenditure per capita increased probability of enrollment by 21%. Working decreased the probability of enrollment by 38%.

Table 61
Individual Model. End of Pilot (2006). Effect of *Familias en Acción* on Enrollment.

	Enrollment			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.159**	0.065	0.207	1.172
Community mean ln per capita educational expenditure	-0.280	0.170	-0.337	0.756
Work dummy	-2.032**	0.103	-0.382	0.131
Age	-0.268	0.251	-0.031	0.765
Age-squared	-0.006	0.009	-0.001	0.993
Community Secondary	0.026**	0.006	0.003	1.026

[42] Respondents were given a game to help them understand probability. They then indicated a response to the question by pointing to a ruler running from 0 to 100.

expectations				
Age mother left school	0.035**	0.005	0.004	1.035
Number of siblings	-0.005	0.032	-0.001	0.995
Gender	-0.121	0.063	-0.014	0.886
Community mean number of students per classroom	0.050**	0.018	0.006	1.051
Program participation (treatment)	0.472**	0.142	0.056	1.602
Number of cases		11,622		
Wald chi-square		1200.65		
Pseudo R2		0.2419		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(enrolled) (predict) = 0.8680326

Overall, though the absence of a true baseline makes any results more questionable, the fact that enrollment between treatment and control groups was reported to be so similar in 2001 allows us to interpret the results in 2006 as having been due to the program. Although 2003 was supposed to be a baseline, we can tentatively attribute the difference between the treatment and control groups at that time also to the program, again due to the fact that enrollment in 2001 was reported to be similar between the two groups. Either way, we can attribute at least a 6% difference in the probability of enrollment to the program. If we do not consider 2003 the baseline but rather a first measurement of program impact, the effect of the program diminishes from 2003 to 2006. In actuality, this also occurred in Nicaragua; the intermediate effect of the program exceeded that at the end of the pilot. This is likely due both to some spillover effect and to some decline in impact as initial enthusiasm for the program waned, or as some individuals realized that even with the monetary incentive, additional schooling was not the best option for them.

Community level

The community model for Colombia was very similar to that for Nicaragua. The biggest difference was the presence of the school quality variable "number of students per classroom" and the absence of the variable for parental presence in the home. All of the independent variables in the community model represent community averages except for the treatment variable, which represents the frequency of treatment individuals. The outcome variable was percentage enrollment, so a linear regression was used.

Looking just at the difference in percentage enrollment between the control and treatment groups for 2001, 2003 and 2006, it is clear that enrollment at the community level did not follow the same pattern as enrollment at the individual level. In particular, using the retrospective responses of children, treatment municipalities already had a 7% higher enrollment rate in 2001. This is possibly because initial targeting was done at the municipal level and was not random. Since all of the individual households chosen for the program had similar socioeconomic characteristics, and were matched to individuals with the same socioeconomic characteristics, they appear to have been more similar to one another individually than they were in aggregate. In other words, it seems that the evaluation matching was more effective at the household level than at the municipal level.

Table 62
Change in % enrollment, 2000-2002, by control and treatment municipality

	% Enrollment		
	Control	Treatment	Difference
2001	78.3%	85.3%	7.0%*
Baseline (2003)	76.2%	82.1%	5.9%**
After (2006)	76.9%	80.5%	3.6%

The community models were only run in 2003 and 2006. When controlling for all of the other factors, the treatment variable was in fact not significant at baseline. As in Nicaragua, although R-squared was much higher for the community models, fewer of the variables were significant. Both of the age variables, however, were significant and secondary expectations remained an important variable in the Colombian model.

Table 63
Community enrollment model. Baseline... Effect of *Familias en Acción* on Enrollment.

	Enrollment	
	B (Robust)	S.E.
Ln (Mean Total spending per capita)	2.961	3.360
Average number of hours worked last week	-5.967**	1.808
Average Age	36.791*	16.017
Average Age-squared	-1.815**	0.650
Mean secondary expectations	11.941**	2.137
Mean Age mother left school	1.086**	0.383
Mean Number of siblings	1.898	2.322
Mean number of students per classroom	-4.066	3.319
Treatment	4.802**	1.403
Number of observations	125	
F	12.367**	
R Square	0.450	

In 2006, the treatment variable was significant at the 1% level. Being in the program was correlated with a 4% increase in enrollment. The sign on average community expenditure per capita is unexpected, indicating that for every additional unit of spending per capita, community enrollment declined by 4%. Although the coefficient is small, the sign of the coefficient on the average number of students per classroom is also unexpected. It appears that the more students per classroom, the higher the rate of enrollment.

Table 64
Community model. End of Pilot (2006). Effect of *Familias en Acción* on Enrollment, linear regression

Enrollment		
	B	S.E. (Robust)
Ln (Mean Total spending per capita)	-0.035**	0.269
Average number of hours worked last week	0.000**	0.000
Average Age	1.426**	0.391
Average Age-squared	-0.057**	0.014
Mean secondary expectations	0.003**	0.001
Mean Age mother left school	0.011*	0.005
Mean Number of siblings	-0.006	0.032
Mean number of students per classroom	0.008**	0.003
Treatment	0.036**	0.021
Number of observations	120	
F	7.39**	
R Square	0.4223	

Attendance and Retention Rate

Disaggregated by treatment group and gender, the average number of days missed was calculated for 2003 and 2006.[43] For the

[43] The retrospective section in 2003 asked students to estimate the number of days missed in 2001 by broad category: <20 days, between 21 and 40 days, or > 40

total population as well as the male and female subsets, there was a significant difference in the average number of days missed between program participants and nonparticipants both at the start and end of the pilot program.

Table 65
Mean Number of school days missed (Attendance), Control and Treatment.

		Average days missed		
		Control	Treatment	Mean Difference (T – C)
Total				
	Baseline (2003)	4.10	3.30	0.80**
	After *FA* (2006)	3.56	3.09	0.47**
Male				
	Baseline (2003)	4.32	3.00	1.3**
	After *FA* (2006)	3.76	3.24	0.52*
Female				
	Baseline (2003)	3.86	3.07	0.8**
	After *FA* (2006)	3.35	2.93	0.42*

For the regression model, following the procedures set forth for Nicaragua, a dummy variable was used such that perfect attendance was coded 0, and any absences were coded as 1. With the addition of other variables in the logistic regression model, there remained a significant difference between treatment and control communities in 2003. The only other significant variable was gender. Being male increased by 2% the probability that a student had been absent in the past month. As in Nicaragua, the R-squared term on the model for attendance was lower than that for enrollment.

days. . This measure likely contains a large margin of error on the part of the respondent, and thus was not used.

Table 66
Individual Model. Baseline (2003), Effect of *Familias en Acción* on Attendance.

	Enrollment			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.050	0.046	0.087	1.052
Community mean ln per capita educational expenditure	-0.030	0.149	-0.054	0.971
Work dummy	-0.004	0.148	-0.001	0.996
Age	0.157	0.159	0.028	1.170
Age-squared	-0.006	0.006	-0.001	0.994
Secondary expectations	-0.145	0.082	-0.026	0.865
Age mother left school	-0.008	0.004	-0.001	0.992
Number of siblings	0.007	0.024	0.001	1.007
Gender	0.122*	0.051	0.022	1.130
Community mean number of students per classroom	0.008	0.020	0.001	1.008
Program participation (treatment)	-0.328**	0.127	-0.061	0.721
Number of cases		8381		
Wald chi2(11)		28.03**		
Pseudo R2		0.005		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = 0.22928337

At the end of the program, controlling for the other variables in the model rendered the treatment variable insignificant. The two significant variables were gender and work, with the latter increasing by 7% the probability of missing days.

Table 67
Individual Model. End of pilot (2006). Effect of *Familias en Acción* on Attendance.

	Attendance			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.035	0.062	0.069	1.036
Community mean ln per capita educational expenditure	-0.094	0.279	-0.171	0.910
Work dummy	0.392**	0.148	0.074	1.480
Age	-0.082	0.134	-0.014	0.921
Age-squared	0.004	0.005	0.001	1.004
Community mean Secondary	0.008	0.011	0.001	1.008

expectations				
Age mother left school	-0.003	0.005	-0.001	0.997
Number of siblings	0.031	0.026	0.005	1.032
Gender	0.092*	0.045	0.016	1.096
Community mean number of students per classroom	0.046	0.024	0.008	1.047
Program participation (treatment)	-0.402	0.252	-0.071	0.669
Number of cases		9 ,368		
Wald chi2(11)		31.66**		
Pseudo R2		0.0165		

Notes: *Significant at 5% level, ** significant at 1% level.; Marginal effects after logit, y = Pr(absence) (predict) = 0.22017395

At the community level, the average number of days missed per community was used as the dependent variable in the linear regression. At baseline, no variables were significant. At the end of the program, work was the only variable that was significant, indicating that at the community level *Familias en Acción* did not have an effect on attendance.

Table 68
Community model. Baseline (2003). Effect of *Familias en Acción* on attendance.

Attendance		
	B	S.E. (Robust)
Ln (Mean Total spending per capita)	-0.613	0.430
Average number of hours worked last week	0.000	0.364
Average Age	-0.711	3.430
Average Age-squared	0.000	0.142
Mean secondary expectations	0.629	0.438
Mean Age mother left school	0.000	0.071
Mean Number of siblings	0.568	0.625
Mean number of students per classroom	-0.138	0.615
Treatment	-0.431	0.261
Number of observations	127	
F	1.036	
R Square	0.075	

Table 69
Community model. End of Program (2006). Effect of *Familias en Acción* on attendance.

Attendance		
	B	S.E. (Robust)
Ln (Mean Total spending per capita)	-0.126	0.526
Average number of hours worked last week	0.015**	0.002
Average Age	16.820	12.418
Average Age-squared	-0.582	0.444
Mean secondary expectations	-0.004	0.018
Mean Age mother left school	0.056	0.129
Mean Number of siblings	0.304	1.040
Mean number of students per classroom	-0.064	0.044
Treatment	0.157	0.466
Number of observations	118	
F	3.08**	
R Square	0.1070	

Retention Rates

Determination of retention was different than in Nicaragua as evaluators did not ask in each year the simple question of whether this was the first time in the current grade. They did ask, however, which grade each student was in, as well as what grade they had been in prior years. To determine the retention rate at baseline, the stated grade in 2001 was subtracted from that in 2002.[44] The frequency of zeros was calculated as the retention rate. In 2003, the retention rate was already significantly lower for the treatment group for males and for the sample at large.[45]

[44] Grades in 2002 were the same as grades in 2003.
[45] Community models for retention were not significant, with no significant variables.

Table 70
Retention rate, Colombia. 2003 & 2006.

		Retention Rates		
		Control	Treatment	Mean Difference (T – C) [46]
Total				
	Baseline (2003)	20.8%	17.8%	3.0%**
	After *FA* (2006)	9.4%	8.4%	1.0%
Male				
	Baseline (2003)	19.6%	15.4%	4.2%**
	After *FA* (2006)	12.2%	10.5%	1.7%
Female				
	Baseline (2003)	21.7%	20.4%	1.3%
	After *FA* (2006)	6.4%	6.18%	0.22%

At the end of the program, the calculated retention rates were lower across the board, with a greater reduction in female retention rate, yet none of the differences between control and treatment was significant. To further explore the program effects on retention, logistic regression models were run before and after the program using the variables used for other models. Once the other variables were controlled for, the treatment variable was not significant. Of the variables that were significant, those with the largest effects were secondary expectations, age and the community average number of students per classroom. In the presence of the other variables, gender was still significant, with males showing a 3% greater probability of repeating the current grade.

[46] Chi-squared-tests were performed to determine significance. Total, r = 41.8; df =24. . Male, r = 10.9; df=1. Female, r = 1.12, df=1.

Table 71
Individual Model. Baseline (2003). Effect of *Familias en Acción* on Retention, Standard Logistic Regression.

	Retention			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	-0.008	0.060	-0.011	0.991
Community mean ln per capita educational expenditure	-0.129	0.236	-0.183	0.879
Work dummy	0.255	0.164	0.038	1.289
Age	-0.554**	0.209	-0.077	0.574
Age-squared	0.002**	0.008	0.003	1.022
Secondary expectations	-0.649**	0.097	-0.098	0.523
Age mother left school	-0.011*	0.005	-0.002	0.989
Number of siblings	0.053	0.030	0.007	1.054
Gender	0.205**	0.060	0.028	1.227
Community mean number of students per classroom	-1.065*	0.558	-0.148	0.345
Program participation (treatment)	-0.191	0.257	-0.027	0.826
Number of cases		8363		
Wald chi2(13)		113.99**		
Pseudo R2		0.031		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = 0.16622672

At the end of the program, only mother's education and community educational expenditure were significant, but the coefficient on the expenditure variable was large. A $1 decrease in community educational spending yielded a 17% increase in the probability of a child being retained. Although the model itself was significant, the R squared was very low. That the school spending variable had such a large effect suggests that the inclusion of more school-related variables might improve the model fit.

Table 72
Individual Model. End of Program (2006). Effect of *Familias en Acción* on Retention.

	Retention			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	-0.083	0.089	0.071	1.087
Community mean ln per capita educational expenditure	-0.231**	0.058	0.172	1.259
Work dummy	-0.034	0.268	0.002	1.036
Age	-0.236	0.275	0.018	1.267
Age-squared	0.008	0.010	-0.001	0.992
Secondary expectations	-0.008	0.005	0.001	1.008
Age mother left school	-0.016**	0.006	0.001	1.016
Number of siblings	0.080	0.053	0.006	1.038
Gender	0.629	0.084	-0.047	0.533
Community mean number of students per classroom	-0.000	0.013	0.000	1.000
Program participation (treatment)	-0.131	0.112	0.010	1.139
Number of cases		7173		
Wald chi2(13)		105.40**		
Pseudo R2		0.0272		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = 0.91896325

Schooling Expectations

As described in the section on baseline characteristics, students were asked to state the level of schooling they expected to attain. For the regression analysis, only secondary expectation was used. Overall, the variable was much more meaningful in the Colombian than in the Nicaraguan data. In 2003, the treatment group had significantly higher expectations of attending secondary school than the control group. As also described above, the way of asking about secondary expectations

changed between the first and last surveys. Despite the change, the expectation of completing secondary school was also higher for program participants at the end of the program.

Table 73
Frequency of schooling expectations *Familias en Acción* implementation, Baseline.

	Control	Treatment
Primary	29%	24%**
Secondary	58%	63%**
University	10%	10%

Table 74
Average estimation of the likelihood that child will graduate secondary school, end of *Familias en Acción* implementation.

	Control	Treatment	Difference
Percentage	67%	72%	5%**

Using the same model as for the other variables except with secondary expectations removed as an independent variable,[47] at baseline, the treatment variable was not significant. The other significant variables were similar to those for enrollment, with the largest effects coming from per capita household expenditure and work. One variable of interest is gender - being male decreased by approximately 3% the probability that students would have expectations of secondary school.

[47] Secondary expectations was also both run at baseline and for the end of the program at the community level as well, but there was no effect.

Table 75
Individual Model. Baseline (2003). Effect of *Familias en Acción* on schooling expectations.

	Schooling Expectations			
	B	S.E. (robust, clustered)	Marginal Effects	Odds Ratio
Ln pc total expenditure	0.269**	0.577	0.609	1.309
Community mean ln per capita educational expenditure	0.338	0.246	0.798	1.403
Work dummy	-0.666**	0.093	-0.162	0.514
Age	0.470**	0.106	0.109	1.600
Age-squared	-0.018**	0.004	-0.004	0.982
Age mother left school	0.019**	0.005	0.004	1.020
Number of siblings	0.028	0.242	0.007	1.029
Gender	-0.109**	0.416	-0.025	0.897
Community mean number of students per classroom	0.046	0.341	0.011	1.047
Program participation (treatment)	0.145	0.187	0.034	1.156
Number of cases		10,850		
Wald chi2(13)		113.69**		
Pseudo R2		0.0293		

Notes: *Significant at 5% level, ** significant at 1% level.
Marginal effects after logit, y = Pr(absence) (predict) = 0.63773098

At the end of the program, a linear regression model was used since the variable was continuous. At that time, the treatment variable was in fact significant. Although not the variable with the highest coefficient, participation in the program yielded a 5% increase in expected probability of completing secondary school. Community average per capita expenditure also had a large effect, although the negative sign is somewhat perplexing.

Table 76
Individual Model. End of Implementation (2006). Effect of *Familias en Acción* on schooling expectations.

Enrollment		
	B	S.E. (robust, clustered)
Ln pc total expenditure	2.116**	0.837
Community mean ln per capita educational expenditure	-7.865**	1.981
Work dummy	-5.971	6.060
Age	0.853	4.122
Age-squared	-0.154	0.165
Age mother left school	0.234**	0.076
Number of siblings	0.192	0.457
Gender	-0.784	1.088
Community mean number of students per classroom	1.227**	0.252
Program participation (treatment)	5.420**	1.984
Number of cases	2403	
F	17.31**	
R-squared	0.0834	

Summary of Findings

The educational and demographic baseline data confirm that while conditions overall appeared better than the conditions in Nicaragua, the communities involved in *Familias en Acción* really did earn very little, and experienced real economic constraints to educational participation. Based on the program analysis, *Familias en Acción* had a particularly large and positive impact on enrollment and schooling expectations, even while controlling for gender, work and income, as well as the education of parents.

The program appears to have had less impact on attendance and retention, but both of these diminished for both groups over time. It is probable that over the range of the program, some spillover occurred between treatment and non-treatment groups, and likely that some part of the change in both groups was due to the presence of the program. This would have diminished the perceived impact of the program by lessening the difference between control and treatment groups. Although the treatment variable was not significant, the work dummy variable was significant for both attendance and retention, indicating that the opportunity cost of schooling remained an issue.

Another variable that was significant in a number of different models was the age that the mother left school. This finding conforms to past research indicating that mother's educational attainment greatly affects children's educational outcomes. Another was total household expenditure, a measure of income. The marginal effect of income was generally quite large. Although gender was not significant in many models once other variables were controlled for, the simple differences in percentage showed that it might actually be boys who suffer more from absenteeism and retention and have lower expectations to attend University.

One phenomenon that was clear in the Colombian data was the gap between schooling desire and schooling expectations among the population targeted for the program. The disparity in particular between the percentage of boys and girls that wished to attend university and those that expected they would actually be able to

attain it affirms that low educational attainment in these communities is not due mostly to a lack of value placed on education, but rather on other constraints. The policy implications suggested by this data, as well as the data from Nicaragua will be discussed in the final chapter.

CHAPTER 7: CONCLUSION AND POLICY IMPLICATIONS

This chapter summarizes the conclusions and policy implications drawn from the study of the Colombian and Nicaraguan programs. It begins with a review of the benefits of using a comparative approach to analyzing these programs. Next, methodological implications and suggestions for future implementation are presented. These are followed by a discussion of the models and significant variables and how well the results fit the assumptions of human capital theory. The chapter concludes with a reflection on the replicability of the CCT model in other developing countries, as well as a discussion of early efforts to establish on United States, the implications for current and future conditional cash transfer programs and some possibilities for future research.

Benefit of the comparative approach

The comparative approach used in this study is valuable in a number of ways. From a theoretical standpoint, comparing more than one context lessens the probability of assuming that relationships between variables seen in one context are absolute (Arnove & Torres, 2003). Relationships that show up again and again can more reliably be considered generalizable. From a practical perspective, examining the design of two similar programs emphasizes the differences between them and how that may have contributed to the success of each within its particular context. For purposes of this study, the comparison between the two countries chosen also emphasizes the

importance of careful evaluation planning, and the effects that different political environments can have on the ultimate success of the program.

Implications for methodology & implementation

As discussed in the methods section, the Nicaraguan RPS program was originally evaluated via a randomized experiment. The subset of data analyzed here confirms that the randomization was effective. There were no significant baseline differences in most of the outcome variables of interest in the study. This makes it very easy to attribute the positive effects on schooling outcomes to the RPS program. The implementation of the Colombian program did not allow for true randomization. Further, analysis of the treatment and comparison groups established by the evaluation team through propensity score matching revealed significant differences between the treatment and comparison groups in 2003, which was the first comprehensive survey done and should have served as the baseline. In their own evaluation, the evaluators underplayed the significance of this, suggesting that their results showed early success of the program among the groups studied (Institute for Fiscal Studies, 2003). In this study, that approach has been tentatively followed. In reality, however, the inability to confirm comparability between the treatment and comparison groups before the implementation of the program makes the results less convincing than those for Nicaragua.

In order to more credibly claim that a program has led to improved results, it is essential to use true randomization and to establish a true baseline. It is ideal to verify comparability before

beginning the program if possible, and to re-sample if original sampling does not yield comparability between the treatment and comparison groups. This is certainly easier in theory than in practice, but the cases of Mexico and Nicaragua show that it is not impossible, even while ensuring that benefits ultimately reach all of the targeted population.

The Colombian data revealed another issue related to the evaluation of program impact: the surveying of respondents from year to year. In the Colombian evaluation, the survey instrument was changed slightly between baseline and the final follow-up. While the change may have served to better align the questions with the theory informing the survey, it made it much more difficult to compare responses in the first with those in the last. Although it is again easier in theory than in practice, it seems much more helpful to design the baseline survey as carefully as possible and then use that same format for the follow-up surveys, regardless of imperfections. Once the pilot study has been conducted, if the program is to continue, a new survey can be constructed based on lessons learned and then used to evaluate the program over its lifetime.

Level of benefit assignment

With regard to program implementation from a methodological perspective, randomizing and assigning treatment status at the level of community during the pilot program seems both to minimize community conflict and to minimize spillover effects that dilute the observed effect of the program. If different households within the Sáme community receive transfers to increase enrollment, the model of their behavior might be passed on to families that are not receiving

the benefits. This can cause households not receiving benefits to also send their children to school, either due to the increased sense of value or because they know that in the future they will also be receiving benefits. While this is positive overall, it makes it difficult to truly evaluate the impact of the program itself. The danger of spillover effects during the evaluation has been described by researchers (e.g. Skoufias, 2001, Dammert, 2008; Bloom, 2005) and also seemed apparent in the Colombian data.

Once the evaluative stage, or at least the pilot phase, is complete, some researchers advocate targeting at the household level for greater efficiency of use of funds. Skoufias, Davis and La Vega (2001), for example, acknowledged social costs but still advocated targeting at the household level. From a comparative perspective, it would seem important to use qualitative studies during the pilot phase to determine the social costs of excluding members within the Same community. If those costs were minimal compared to the benefit of household-level targeting, then the latter would be appropriate. In communities that are very close-knit, however, or that have a more strongly group-centered than individual family-centered perspective (e.g. Molyneux, 2006; Sen, 1989), household level targeting might produce more social conflict than it is worth.

The major lesson from this study for program pilot and evaluation comes from the limited resources and limited scope, but extremely well-designed evaluation of the Nicaraguan program. The program's impact on school outcomes is easy to measure, as are other impacts on outcomes available in the data. Other small-scale evaluations could be carried out if the program were to expand into

secondary school or to involve more school level and community level data. The number of data points and complexity of the Colombian data on the other hand, introduced a number of confounding factors that made it more difficult to identify program impact. The implication of this is that even with limited means, contracting quality evaluations of very small programs may in fact be preferable to piloting programs on a massive scale. Even in more wealthy nations, it might be preferable to carry out a more limited pilot, evaluate it and *then* scale a program up in resources and complexity, hopefully continuing to evaluate as the program expands.

Theoretical implications

Overall, the results confirm the assumptions of human capital theory, particularly for enrollment. Of the factors thought to affect educational demand, the two that appeared most consistently were opportunity cost and parental preferences, specifically mothers' educational attainment. The major opportunity cost variable was work, but the results of this study suggest that age could also be considered an opportunity cost variable. As children get older, the competing claims on their time increase as they become responsible for work inside and outside the home. In Nicaragua, the coefficient on age indicated that being older increased the probability of being enrolled in school, but in Colombia the coefficient was negative, indicating the reverse. Since Nicaragua only targeted children of elementary school age, and the coefficients on age-squared were negative for both countries, the assumption that enrollment increases with age to a certain point and then decreases seems to be confirmed.

The variables for educational cost and income were not as consistently significant as expected, although log total cost was significant at the 5% level in several models. However, the descriptive statistics for both countries indicated that the ability to pay for school was a major barrier to enrollment. Researchers have noted that it is difficult to attain accurate expenditure data (e.g. Hoddinott & Skoufias, 2004; Andersen, 2001). The range of responses and the fragmented nature of the expenditure data, especially in Colombia, make it at least possible that the influence of household income expenditure was masked. For educational expenditure, it might have gotten more directly to the root of the issue if surveyors had asked all families, regardless of whether they had children in school, how much they thought each category of educational expenditures would cost. This variable could have represented the perceived cost of schooling, and have been included with the community average educational expenditure. Such an addition would address the fact that perceived cost is not always the Same as actual cost, but can be as great a barrier.

Similarly, secondary expectations as a measure of returns to schooling was significant in only a few instances, and only in Colombia. In the second iteration of the Colombian survey, the questions related to schooling expectations more accurately reflected the theoretical meaning of returns to schooling. Specifically, the questions revolved around how much students expected to earn if they graduated from secondary school as opposed to only graduating from primary. However, the expected earnings from secondary school did not perform well at all in the regression analysis, so was not even reported

in the findings. In refining empirical analysis to better reflect the theory, it seems that this line of questioning could be honed to yield more accurate results. Other research has suggested that where available, prevailing wage in the nearest urban center can be used to estimate returns to schooling. Where available, this might yield more significant results.

In looking at the other variables that proved significant across many of the models, some patterns emerge that might be considered when designing program elements. The importance of mothers' educational attainment is worthy of special consideration. Given the data on conditional cash transfers presented here, girls' educational attainment is increasing along with boys'. Thus, the next generation of mothers should be more highly educated than the current generation, and this will continue to raise the educational level of their children. In the meantime, a possible policy synergy would be to create a parallel structure providing adult educational opportunities for mothers who have recently had to drop out, and/or for those in the less well-educated over-25 population. In addition to the empirical data regarding the importance of mothers' education, qualitative evaluations have revealed that many parents desire the opportunity to enhance their own learning at the Same time that their children's learning is being advanced (Molyneux, 2006). As Adato et al. (2000) found, the women involved in these programs often also want to learn how to read and write so that they can have access to some of the benefits that they see resulting from their children's education. In order to make this possible, however, policymakers will have to deal with the very real duties that women are expected to attend to:

housework and child rearing (e.g. Lincove, 2009). This might include providing money for mothers to hire babysitters or free provision of child care while mothers attend school (Glick & Sahn, 1999).

The issue of child labor as a potential trade-off for schooling has been discussed at length in this paper and the models analyzed in this study indicate that even with the program in place, work remains a factor in all aspects of the schooling decision. This reinforces the purpose for which the transfers were created in the first place, providing income to decrease the necessity for children to work. It also indicates the need for increasing innovative strategies for accommodating children who need to work, such as alternative school days or school calendars for farm laborers or migrants (e.g. Behrman, Parker & Todd, 2005). This would be an area in which understanding the specific issues of a given community would be crucial for the implementation of the CCT, as well as the establishment of fair, realistic conditionalities to ensure that the most marginalized are able to meet the requirements of the program.

Both the descriptive and inferential statistics gathered indicates that for both countries, enrollment increases with age up to a point, and then declines rapidly. The Colombian program was designed to counter the drop-off in enrollment in early adolescence, by increasing the transfer for secondary school. This is a direct way of targeting the transfers to the area of the age distribution that policymakers most want to affect. In Nicaragua, the age at which enrollment started to decline at baseline was 11. Unfortunately, this was also close to the age at which benefits for the RPS program ceased. Again, given the extremely low rate of primary enrollment before implementation, it

made sense in that country to focus the first stage of the program on that level. In the design of future programs, and in programs around the world, the existing and desired age distribution of schooling should be taken into consideration when developing benefits.

Although gender was not a significant variable in many of the regressions once all other factors were controlled for, there were definitely gender differences in schooling outcomes in Colombia, particularly among older students. In general, where there were differences, girls were enrolled at higher rates than boys. Program participation, however, seems to have had the effect of decreasing the decline in enrollments for older boys. This has important implications for countries in which many boys desert schooling for greater opportunities in the workforce. In Colombia, where a major alternative to schooling for impoverished is to join illegal drug gangs (e.g. Human Rights Watch, 2005), this kind of program is not only important but life-Saving. It seems that this could operate in other countries with similar problems, including some cities in the United States. The fact that the money is given in cash, rather than given directly to the school might increase its attractiveness to certain types of students, though it does require increased monitoring.

Evaluating replicability across comparative contexts

> *The authentic use of comparative study resides not in wholesale appropriation and propagation of foreign practices but in careful analysis of the conditions under which certain foreign practices deliver desirable results, followed by consideration of ways to adapt those practices to conditions found at home. (Noah, 1986, pp. 161-162; as cited in Phillips & Ochs, 2003)*

Poverty and Institutional Capacity

As stated throughout the body of the dissertation, Nicaragua was the first low income country in which conditional cash transfer was attempted, and it was not clear at the outset whether or not a CCT could be implemented in such an environment. The empirical data here shows that the conditional cash transfer was successful, especially in terms of getting children to enroll in school. In analyzing replicability across the dimension of poverty, one can assume that a program similar in size and scope to Nicaragua's should be able to be replicated in countries with similar or greater resources. In order to determine which countries have comparable levels of poverty, a poverty map based on the 2007-2008 UN Human Development Report was used (Appendix 6). This is a more accurate basis of comparison than maps based on the percentage of the population living below the poverty line, as that measure differs from country to country.

According to the UN Human Development Report, 41-60% of Nicaragua's population lived on less than one dollar a day in 2007. Again, Haiti is the only country in the Western Hemisphere with that high a proportion of extremely poor people. From the perspective of economic and human resources alone, one might argue that any other country in North, Central or South America should be able to achieve the level of success that Nicaragua did. It would be of immediate use to establish and evaluate a pilot program in Haiti, where differing issues of governance and political unrest would provide a valuable counterpoint to the Nicaraguan experience. Looking at the rest of the world, for those with data in 2007 and 2008 Nicaragua matches the

poverty of Bangladesh in Asia; and Tanzania, Zimbabwe, Ghana, and Sierra Leone in Africa. India and at least 11 countries in Africa have a smaller overall percentage of persons living on less than a dollar a day than does Nicaragua. Colombia shares a similar poverty level with most of South America, China, Pakistan and Indonesia; as well as South Africa, Cameron and the Ivory Coast. So from the perspective of poverty alone, results from Nicaragua and Colombia confirm the feasibility of CCT implementation in many other middle and low income countries.

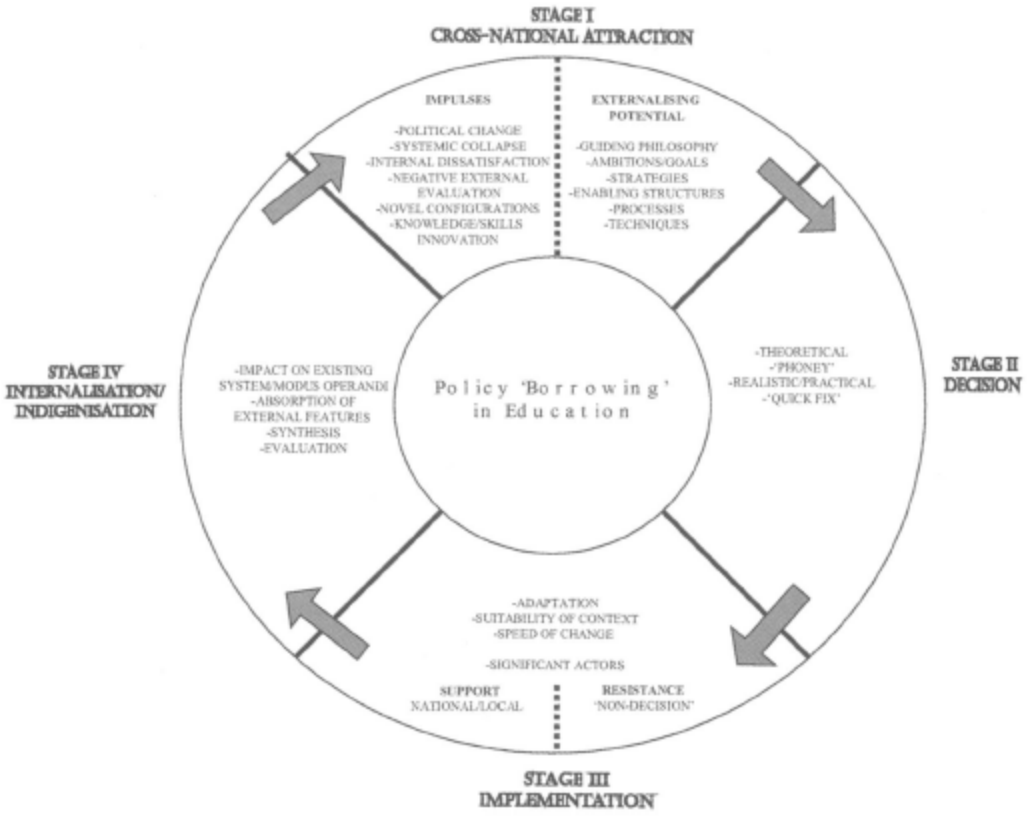
On a pragmatic note, since the CCTs focus on demand constraints, all four of the programs discussed in this paper have required some level of resources and administrative capacity on the parts of the communities implementing the program. Although poverty is being used here as somewhat of a proxy for institutional capacity, the original evaluators of the Nicaraguan program noted the efficiency with which the program was carried out (IFPRI,2005; Moore, 2009). Those involved in the program were chosen for their technical expertise, not for their political affiliation. Employees knew the purpose and goals of the program. In countries in which overall poverty is also tied to limited capacity or infrastructure (Farrington & Slater, 2004), or in which there is no sure way of distributing benefits to the citizens, it is unclear whether this model could be implemented (Schubert & Slater, 2006). Similarly, in volatile countries or communities without some level of stability, it would be difficult to ensure the delivery of resources needed to carry out these programs. The lesson is *not* that any poor country can successfully implement a conditional cash transfer program, but that in the presence of well-

trained officials and a carefully developed program, poverty does not have to preclude the use of the CCT model.

Political will, public perception and the implications for "Internalization"

Phillips and Ochs (2003) developed a framework for explaining policy borrowing in comparative education, which is useful for understanding policy replication across international boundaries in general.

Figure 16. International policy borrowing framework.



Source: Phillips and Ochs (2003), Figure 1: policy borrowing in education: composite processes.

Of the four stages constituting the framework, the first three have been addressed directly and indirectly throughout this dissertation. The fourth stage is particularly important for evaluating the sustainability of policy reforms and the implications for policy replication. At the fourth stage of policy borrowing, the implemented policy becomes or does not become part of the system of the borrower country. In the case study presented here, the greatest difference between Nicaragua and Colombia is not in the results obtained from the programs, but rather in the extent to which the CCT pilot programs were integrated into overall social policy.

In Nicaragua, due to positive preliminary findings from the pilot evaluation and corroborated by this study, the program was at first continued by the World Bank and the government of Nicaragua and has been reported successful (Maluccio, 2004). Despite the success of the program in addressing its own goals, however, the RPS program was disbanded near the end of the Bolaños administration that preceded the current Ortega administration, due initially to failure to reapply for funding (Moore, 2009).

Up to this point, there are no examples of CCT's that have been implemented in purely socialist states. This is no doubt due partially to the fact that there are very few socialist states in existence (CIA factbook, 2009); the only true socialist states remaining are China, Laos, Vietnam, Cuba and North Korea. The fate of the Nicaraguan RPS program, however, may be used to speculate on the feasibility of implementing the programs in administrations that are more socialist in character. Many countries throughout the world contain socialist parties as part of the regular political system. Latin America, in

particular has seen a recent resurgence in the strength of socialist ideals, with the rise to power of Hugo Chavez in Venezuela and Evo Morales in Bolivia though some commentators consider these leaders as representative more of populist leftism than of the Marxist ideology of purer socialists (*The Economist*, 2006). Regardless, the role of welfare and of the means for securing it are conceived differently under non-capitalist regimes than capitalist.

As discussed in the chapter on Nicaragua, the FSLN was a markedly socialist regime when it took power in the 1970s. The modern party, now in power under Ortega has moderated its rhetoric, but still bears its socialist moniker. Ortega's increasing alliance with Castro, Chavez and Morales also belies the socialist character of the administration. At the time of its dissolution, the RPS program resided within *Mi Familia:* the Ministry of the Family, Adolescence and Childhood. It had been proposed that the program become part of the larger Solidarity for Development Program (Moore, 2009), but to do to an oversight, international funding fell by the wayside without domestic funds having been appropriated to fill the gap.

In 2004, the Crisis Attention System was created, and funded by the World Bank, to provide aid to victims of landslides in northern Nicaragua. This program had all of the components of RPS, plus a "productive transfer" similar to a micro-loan, provided to people who proposed a productive enterprise (Moore, 2009). Unlike other transfers, this transfer was often provided to men. This particular initiative only existed for a short time. The current government suggests that it supplies the Same benefits as were supplied by RPS through a "school pack," school lunch and nutritional supplements

provided by the Ministry of Education, and through expanding services provided by the Ministry of Health (Moore, 2009). These are not, however, conditional cash transfer programs, and do not act directly to change the preferences of households. The shift in program focus signals a return to the preference for in-kind transfers that existed earlier in development history.

Impact evaluators have noted that as with most major policy initiatives, buy-in from the government is essential (de la Briere & Rawlings, 2006; Farrington & Slater, 2006). Government officials are experts on the contexts of their own countries, can mobilize resources from the public sector and sometimes form an important mediatory role between the public and private sectors, as in the case of mobilizing health providers to perform the health functions of the Nicaraguan program. Because conditional cash transfer programs require so much coordination between the federal government, municipal officials and citizens on the ground, as well as with external donors if they are providing large amounts of funding, they simply cannot be executed with less than a strong commitment at the national level. It is unclear how receptive the FSLN is to CCT programs. Officials have expressed distrust of them (Moore), and government internet materials show a bias against capitalist ideals and influences. Given the uncertainty of the political climate, it is very difficult to predict whether and how the concept of the conditional cash transfer program will again become a viable policy option in Nicaragua.

If a policy is able to pass through the other three stages of policy borrowing, it is in this final stage that the political mood becomes incredibly important. This includes the political leanings of the

administration as well as the populace. One of the noted appeals of the Mexican and Brazilian programs is that they were able to cross administrations, unlike many previous reforms, and so appeared to transcend politics. The lesson that technical results can help to guard against political will was perhaps over-learned in Nicaragua. Moore (2009) suggested that those in charge of the design and pilot of the RPS program wrongly believed that the results of the program would stand on their own. Moore argued that too little attention was paid to explaining the program to the public at large and mustering public support. Thus it was allowed to slip through cracks in the budget in a way that it would not have had the public been more aware of the program.

Compared to the disappointing fate of the RPS program, the success of the Colombian program is remarkable. Despite far less clear-cut evidence that the program itself could be credited with improvements in school and health outcomes, the program has been lauded as a success. (Program documentation, *Accion Social*).[48] In Colombia, the government has embraced and "internalized" *Familias en Acción*. As stated in the first paragraph on the webpage, the program as now conceived:

> *Es una iniciativa del Gobierno Nacional para entregar subsidios de nutrición o educación a los niños menores de años que pertenezcan a las familias pertenecientes al nivel*

[48] Available at: http://www.accionsocial.gov.co/contenido/contenido.aspx?catID=204&conID=157

1 del SISBEN, familias en condición de desplazamiento o familias indígenas.[49]

It is considered an initiative of the national government itself, the largest social welfare program in the country; the government has taken ownership of the program, as well as to extend the benefits to displaced persons and to focused special attention on indigenous groups. The website defines and highlights conditionality on this first page of the program site. One of the links available to the public contains 16 publications, including a series entitled "Library of the Mother Leader[50]"which provides information about the program, as well as to present social issues like intra-familial violence and nutrition in a way that is accessible to a public audience.

The major implication to be drawn from the differential political outcomes in Nicaragua and Colombia is that as with most policies or programs, it is impossible to separate CCTs from the political climates that surround their implementation. At every phase of the decision making around adoption of conditional cash transfer programs, the policy fit must be evaluated not only against the constraints of poverty and infrastructure, but also of administrative and public policy preferences. The government and the populace must be aware of and must support the goals of the program. Lacking this fit, regardless of the program's technical results, long-term sustainability will be unlikely.

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[49] Translation: "is an initiative of the national government to provide nutrition or education subsidies to the children of families belonging to SISBEN1, families that have been displaced, or indigenous families."

[50] This role is similar to that of *promotora* in Mexico.

The United States context

In a rare case of policy borrowing from "South" to "North," Mayor Bloomberg of New York City established a pilot CCT program in 2007, modeled and named after Mexico's *Oportunidades*. Conceived out of an anti-poverty commission, the Bloomberg administration has presented Opportunity NYC as the core of its poverty reduction strategy (de Sá e Silva, 2008). The introduction of the CCT to the United States has lent more immediate relevance to the current research. It has also provided another site for consideration of the replicability of the CCT model. At one end of the spectrum we have extremely poor countries like Nicaragua, and at the other the extremely wealthy United States. Bloomberg's pilot program has even drawn the attention of Great Britain. Depending on the outcome of the pilot evaluation, conditional cash transfer programs may begin to be implemented at all points of the economic spectrum. The United States, however, poses its own problems for widespread acceptance of the CCT model.

UNICEF (2005) presented statistics on poverty in the OECD countries, particularly the percentage of children living in "relative" poverty, with income below 50% of the median income. Using this measure, the United States had 21.9% of children living in poverty, higher than any other industrialized nation besides Mexico (27.7%), a nation well-known for the inequality of its economic system.

Among scholars, there is a good deal of literature on the link between poverty and education in the United States, with one of the earliest works highlighting the importance of socioeconomic status being *The Coleman Report* (1966). Some of the greatest current

concerns with educational and economic inequality in the United States are: a "gap" in achievement between "under-represented" minority students (e.g. Coleman, 1966, Brooks-Gunn, et. al. 1997), high drop-out rate, especially upon Hispanic students (Haycock, 2001), high teenage pregnancy among minority populations, and high inter-generational transmission of these effects (Corcoran & Adams, 1997). Duncan and Magnuson (2005) showed that reducing racial and ethnic differences in family income would decrease the achievement gap. Anyon (2005) cited a study in which income supplements of less than $4000 to working parents improved children's elementary school achievement by 10 to 15% of the average variation of the control group. Additionally, however, and less well-known to the public, discrepancies remain between nutrition, child mortality, and life expectancy between white and non-white Americans and especially among socioeconomic divisions (Korenman & Miller, 1997). Health related issues include ear infection-related hearing impairments (Centers for Disease Control, 2005); uncorrected poor vision; asthma (Books, 2000, NIH 1998 cited in Berliner, 2006); lead poisoning, untreated ADHD, premature births and low birth weight, anemia, diabetes and obesity.

Differences in health practices among women in poor and affluent families also include breast feeding practices (less common among poor women) and nutrition of the mother during pregnancy. Nutritional deficiencies after birth are common among the poor in the United States, with implications for cognitive development and thus for academic achievement. In addition to these issues, obviously exacerbated where families have no access to health insurance, food

insecurity continues to be an issue for a segment of the American population (Rothstein, 2004, p. 45).

Adding to the health difficulties posed directly by lack of income, there are health concerns related to culture and differentials in knowledge among parents of different classes. Smoking during pregnancy, for instance, varies widely by region and city of residence (Census, 2000). Further, 25% of high school dropouts smoke while pregnant, 50% more than the rate for high school graduates (Rothstein, 2004). Not only does smoking during pregnancy increase the risk of cognitive deficiencies, the presence of smoke in a child's environment after birth increases the incidence of asthma.

American attitudes toward poverty

A number of researchers have documented the perceptions of Americans regarding poverty within our own country and how these accord with reality. Socioeconomic differences and differential education levels affect poor children in the United States just as they do in the countries studied in this dissertation. As the above studies show, while the overall level of poverty in the United States is lower than that of the other nations, its incidence and effects remain significant, as does the inequality among groups

Despite the availability of this information, much of the public (Berliner, 2006; Alesina and Glaeser, 2004) and many researchers (e.g. Rector and Johnson, 2004) deny the impact of poverty in the United States. Political scientists and critical researchers in particular credit the attitudes of many Americans, as well as the reluctance to enact redistributive policy, to the American ethic. Alesina and Glaeser

compared social policies in the United States and Europe[51] and found that overall, public "policies that redistribute from the rich to the poor are much more limited than in continental Western Europe." Income taxes are more progressive in Europe, and policies tend to favor labor over owners.

To explain this, Alesina and Glaeser (2004) pointed to differences in political economy: American federalism has left a legacy of government much more decentralized than anywhere but Switzerland. In Europe, proportional voting systems have allowed for the growth of socialist and communist parties that tend to favor redistributive policies and a comprehensive welfare system. The American two-party system, by contrast, is essentially stacked against fringe movements calling for radical change. This system was created in order to maintain dominance, to resist the overturning of the *status quo*. That historical footprint remains in the political and economic structures in place today. In addition to, and as a part of, these institutional factors, Alesina and Glaeser noted that many Americans believe American society to provide greater social mobility than it actually does. While American and European social mobility is roughly approximate, many more Americans than Europeans feel that their country allows for social mobility. In similar studies, Bjorklund and Jantti (1997) found intergenerational mobility and income equality to be higher in Sweden than in the United States, and Solon (1992) provided empirical evidence that intergenerational mobility in the United States is far less than commonly assumed by Americans.

[51] The authors excluded Britain because the country's policies are more similar to those of the U.S.

In *Culture and Pedagogy: International Comparisons in Primary Education*, Alexander (2000) investigated not only the educational practices of a number of countries including Mexico and the United States, but also the philosophies underlying the pedagogy and policies of education in those countries. With regard to primary education in the United States, he, like the above authors, highlighted the uniqueness of the American political system and the social system that is a part of it. He characterized the American educational system as extremely decentralized, and rife with tensions created by conflicting values that are especially acute in the United States. Although American clearly value equality, and emphasize that value in political and personal discussion,

> Cutting across [racial and demographic] differences are the dominant values of freedom, individualism, self-help and anti-statism that demarcate the United States so sharply from the social democracies of Europe… A 1991 survey found that 72 percent of Americans valued freedom above equality and only 20 percent of Americans valued equality over freedom. Only Britain came close to matching the primacy of individual freedom found in the United States.

The above arguments take a strong view of the commonality of American ideals and do not focus explicitly on issues of group inequality. However, to conclude their discussion, Alesina and Glaeser (2004) argued that the fact that our country has been historically much more ethnically diverse than Europe, and that "racial divisions and racial preferences appear to deter redistribution, especially when poverty is concentrated in minority groups" (p. 10), has led to a

greater resistance to redistributive policies in the U.S. The importance of American resistance to active redistribution has several implications for education and poverty. First, education has been viewed in the United States as *the* starting rung on the ladder of opportunity, the surest way to improve one's own circumstances and those of one's children; Americans have rarely, but for brief historical moments, been willing to devote major resources to broad-based social policy (e.g. Brewer, nd).

Wells and Crain (1997) provided an exceptionally nuanced piece explaining the persistence of educational segregation by race, one of the United States' most serious issues. While very much focused on the politics of segregation in schools, the authors defined the problem in terms of the core values of America. Noting that American attitudes towards problems of educational inequality are not primarily indicative of narrow calculating self-interest, they theorized the American attitude towards school equality as:

- Meritocratic: "broad cultural themes as individual responsibility, materialism, unfettered competition, and undying belief in the economic system as fair and meritocratic despite evidence to the contrary" (p. 12);
- Materialist: possessing a sense that material prosperity is the greatest measure of individual worth, with middle class people afraid of losing their edge to others if in support of active policy; and
- Individualistic: possessed with a strong sense of "human agency," Americans often have difficulty seeing the role of group interests at work.

There are many varieties of programs in place within the educational sector that purport to address the disparities in educational attainment and achievement by race and socioeconomic status. Yet there remains great ambivalence as to the specific nature and causes of these problems among the nation's poor, as well as the aforementioned chasm between education and anti-poverty programming. Anyon (2005) echoed the call by development researchers around the world for more intertwined educational and social policy in the United States, including such initiatives as increased employment opportunities in poor communities and vocational programs in high schools linked with employers.

Conditional cash transfers in the United States: Opportunity NYC

The concept of the conditional cash transfer program was introduced to New York City by members of Bloomberg's anti-poverty commission that had had international experience with the programs, and was championed particularly by the Rockefeller Foundation. de Sá e Silva (2008) has produced one of the first research pieces on the program, which is nearing the end of its pilot phase. de Sá e Silva and individuals she interviewed identified the role of the World Bank as "knowledge broker," a central point of information and resources linking the CCT countries together, as well as a source for external validation of the program idea. As in Brazil, Mayor Bloomberg and an associate traveled to Mexico to observe *Oportunidades* in action. They then implemented a pilot based largely on the Mexican program, but

with several innovations considered relevant to the context of the United States, particularly New York.

The 2-year pilot was granted a budget of over $50 million, all privately donated (de Sá e Silva, 2008). This is one of the chief differences from the other countries, in which the CCT programs were funded largely by external donors, but supplemented by the countries in which they were implemented. The choice of private funding was largely to avoid entanglement with political factors, as the program was considered controversial. The rationale was that private money could be used for the pilot, and if preliminary results proved favorable, the program would be taken before the public.

Opportunity NYC contains three major subprograms. The first, called Family Rewards, contains the educational and health provisions most similar to the CCTs discussed in this dissertation, but also includes initiatives for workforce participation in job training. The second sub-program, called Work Rewards, provides transfers to adults living in subsidized housing, for "enhanced workforce participation" and job training (de Sá e Silva, 2008). The third program, Spark, provides transfers to fourth and seventh-grade public-school students based on their performance on achievement tests. This focus on achievement is quite different than any of the other programs mentioned in this paper. The Spark program is managed separately by the Department of Education and the American Inequality lab, while the other programs are managed by the Center for Economic Opportunity, the Housing Authority, and the Department of Housing Preservation and Development. So in addition to having added an achievement component, the CCT in New York City differs

from other CCT programs in that it did not involve a concerted effort to bring together the functions of education and poverty alleviation in one ministry. The mayor's office stated that it wanted to avoid confusing the Family Rewards program with other school level initiatives (de Sá e Silva). The separation might also be considered to reflect the historical rupture in the United States between the systems of schooling and welfare (e.g. Brewer, nd).

The educational component has been divided between the Family Rewards and Spark programs, with the former targeted at the community district level, and the latter at the level of school. Sixty low performing schools were selected, with every student enrolled in fourth and seventh grades made eligible for the program, regardless of the socioeconomic statuses of the students themselves (de Sá e Silva, 2008). It will be interesting when the evaluation becomes available to see whether and how the different targeting affects the results, as compared to the CCT programs targeted at the household level.

Going beyond the other programs, Opportunity NYC included as goals "children's superior school attendance, sustained high achievement or improved performance on standardized tests, and parental engagement in children's education" (de Sá e Silva, 2008, p. 8). de Sá e Silva argued that in this, the program attempted to address some of the same things as other American educational reforms, only within the broader program of poverty reduction. She critiqued the achievement rhetoric as implying a merit-based rationale different from what she considered the rights-based approach of other CCTs. An alternative reading of the importance of standardized testing in Opportunity NYC is that the achievement piece is necessary for

legitimacy in the American context, where accountability is currently our chief educational dialogue (e.g. Brewer, nd). Viewed in this light, it is simply greater evidence of how the political/policy context affects program replication.

Consistent with critiques by educators and other countries, the creation and implementation of opportunity NYC bypassed inclusion of school personnel including teachers and principals. Local actors were also not much involved in the pilot. Although much of this was strategic, it is unclear whether the program will be able to continue once held up for public scrutiny, as evidenced by the experience in Nicaragua (Moore, 2008). The popular magazine *The Economist* (2007) argued that in implementing the pilot, Bloomberg was politically savvy. He avoided controversial terms in the educational and welfare circles, and use private funding for the pilot to secure results before approaching the public. The lack of civic mobilization by and around the program, however, may prove to be problematic, especially given the criticism of the program on the ideological front.

Opportunity NYC has drawn skepticism from a large segments of the population. Some of the key arguments against the program are that:

- paying children for academic performance undermines learning for its own sake
- families should not be paid for what they should already be doing
- selecting search and families and leaving out others could lead to resentment from other low income families who are not in the

program, causing them also to cut back on positive behaviors (de Sá e Silva, 2008)

- using incentives to affect behavior is overly behaviorist; it removes human autonomy and introduces more and more new requirements for surveillance (Liebling, 2007)
- the focus on standardized testing leads to propagation of the standardized test culture itself.

One quotation which summarizes the way in which many Americans likely believe the United States to differ from other countries that have adopted CCTs was presented by Nicole Gelinas of the Manhattan Institute for Policy Research:

> Programs like *Progresa* serve a real purpose in a nation like Mexico, where it is economically rational, at least in the short-term, for a parent to send a child to work in a field or a factory rather than to school. But there's just no applicability to poor New York families, who don't face the same opportunity costs in making decisions about the future… Bloomberg has misread the purpose of Third World conditional cash transfer programs, and thus has misread their applicability to New York… in New York, unlike in the Third World, where parents don't have to pay to send their children to school. Nor do they face the tough choice of educating the kids or having enough money to put food on the table every night. Even when older children drop out, it's not because they're going to work instead. As Bloomberg's poverty report states, one of the biggest problems with chronically poor teens and young adults is idleness (Gelinas, 2006)

While it may seem a compelling critique to some, it is Gelinas that misreads the evidence of poverty in the United States, and misreads the theory of human capital that allows the program to be applied to the United States context. She presents the view that low school attainment is due to laziness rather then related at all to poverty. Laying aside the evidence presented above that links low educational outcomes with poverty, her statement about dropouts can be addressed from a purely theoretical standpoint.

Even if opportunity cost is not the major stated reason for adolescents who drop out of high school, the argument presented by Gelinas does not rule out the possibility that returns to education might be at fault. Low returns to unskilled labor, compounded by low expected returns to education would certainly lead to the noted "idleness," as adolescents' experiences would dictate no real benefit to engaging in either task. In a providing a justification for the incentives in Opportunity NYC, Kahlenberg (2007) acknowledged the fact that where college is not an end in itself, especially when children do not have examples around them of the benefits to education, education must be incentivized in a different way. The issue of low returns still falls within the assumptions of human capital theory, but highlights a different part of the framework as the necessary focus in the United States, as opposed to Nicaragua and Colombia, where direct cost and work/opportunity cost are clearly the most important factors.

Taken all together, this suggests that while in the design phase of interventions like these, it is crucial to pay attention to the reasons children, adolescents or families identify for not being in school, and

then to take these into account when designing the programs. In the US case, policy synergies with CCTs might instead be designed around linkages to more traditional ways of showing children that school can pay off, perhaps as suggested above by tying school involvement were closely with vocational programs related directly to student coursework and that provide real economic payoffs in the short term. As a slightly more radical suggestion, it seems that at-risk students should be given the opportunity to escape the limited horizons that their own neighborhoods offer, and exposed to educational and employment opportunities outside the realm of their everyday experiences.

De la Briere and Rawlings (2006) discussed the need to link social programs and programs that support labor market insertion and employment, as well as the need to coordinate better with supply-side programs. Even when viewed purely from an educational perspective, increasing the employment prospects of potential students increases the returns on schooling; and therefore, would help to further increase demand for schooling in poor communities.

"Internalization" of the CCT in the United States context

Many of the scholars cited in this dissertation (notably de la Briere & Rawlings, 2006; Molyneux, and Moore, 2009) have emphasized that massive social programs can only work with the population believes that society is responsible for ameliorating social conditions, and where it is perceived that societal barriers actually exist. The general attitude of Americans toward the poor, as well as some of the opposition to Opportunity NYC suggest that implementing conditional cash transfer programs on a large scale in the United States might pose ideological challenges for a significant portion of the

populace. This would likely hold true for those Western nations with similarly individualistic political cultures. The case of opportunity NYC will be lent to follow as it approaches the end of its pilot phase.

Future research

There are many possible avenues for future research related to conditional cash transfer programs, including the programs discussed at length in this dissertation. Those presented here are considered particularly relevant to the current study, and of greatest personal interest. There is much to be gained from increasing the corpus of work dedicated to using the comparative approach within CCT research, combining quantitative and qualitative data to form a richer understanding of contexts and the modifications required to adapt to those contexts. Instead of embarking on enormous, complex programs right away, this study indicates that it might be more helpful to conduct a number of smaller pilots in as diverse a collection of countries as possible. Of the pilots currently being carried out, the most fruitful for adding to this particular research are those in nations in other regions with similar poverty profiles to Nicaragua, as discussed earlier in this chapter[52].

In addition to expanding focus across countries, the complexity of the interaction between variables dictates a place for *narrowing* the focus of research, devoting a significant amount of study to each particular outcome, e.g. in-depth study of enrollment. In particular,

[52] Cohen et al (2008) have conducted a feasibility study for CCTs in Haiti, but at this time none has been implemented in that country. The authors did provide an interesting framework and methodology for conducting feasibility studies of CCTs in other poor countries.

since the focus in the evaluation studies was not on the educational process, there is not much data around schooling characteristics in either of the two data sets. It would be helpful to collect more data about children's experience in the schools and classrooms, teacher preparation and practice for the children involved in CCTs, to improve on the models for absenteeism and retention. This would also help to clarify whether and how teachers' behavior towards children might have changed as a result of the program.

One phenomenon that was made explicit in the Colombian data was the gap between schooling desire and schooling expectations among the populations targeted for the program. The disparity in particular between the percentage of boys and girls that wished to attend university and those that expected they will actually be able to do so affirms that low educational attainment in impoverished communities is not due mostly to a lack of value placed on education, but rather on other constraints. It would be useful as the program continues, and in other countries instituting programs to continue to measure desire, expectations and the link between those and actual attainment over time. For those children for whom a gap remains, what is still required in order to allow children to achieve the level of schooling desired?

A notable deficiency in both the Nicaraguan and Colombian data is the lack of information pertaining to race or ethnicity. Both Nicaragua and Columbia have some indigenous and African-descendent populations, and poverty assessments have revealed the disparity between these groups and *mestizo* or white populations. It may be that the regions chosen for the pilots did not contain

substantial proportions of these individuals, but it is useful to have the information. It would also be a fruitful area of research in Colombia where the program is now operating in places with greater racial diversity. Similarly, and actually possible with the available data, more systematic investigation of the differences in program impact between girls and boys is needed to ensure that program components are tailored to address the distinct needs of each gender.

A common suggestion of researchers on program implementation is that multiple longer-term evaluations, to include both quantitative and qualitative studies, should be carried out over the life of these programs to the extent possible. The collection of panel data over a wide range of variables is optimal, but recognizably difficult in practice. Yet the only way to determine whether results would diminish considerably over time or whether implementation is truly possible over the long term is to continue rigorous observation of the program past the pilot phase. As mentioned above, it is unfortunate that the Colombian program began before the establishment of a true baseline. However, as new dimensions are added to the program, it might be possible to launch smaller program evaluations of those distinct dimensions, with the plan established upfront to continue evaluation until the end of the program.

Despite limitations and criticisms, CCTs have been embraced by many and are in some research circles being considered for expansion into new domains, such as the possibility of using conditional cash transfers to minimize "uninsured risk (de Janvry et al, 2006). Whereas currently CCTs are used more to address the chronic poor, there is some limited evidence that benefits can function to prevent

parents from removing children from school in the face of economic hardship. Using retrospective testing, researchers have found that some portion of the gains in schooling outcomes in Mexico (de Janvry et al.), Nicaragua (Maluccio, 2004) and Honduras have resulted not from encouraging parents to enroll children for the first time, but from encouraging them not to withdraw after economic shock. This has been shown to be true for RPS in response to the coffee sector prices and droughts and also in the Honduras program PRAF with regard to constrained coffee farmers.

Finally, once the data is made available for opportunity NYC and once it has been determined whether the program can be implemented full scale, it will make a fascinating case study for the future of CCTs in the developed world.

Conclusion

As in Mexico and Brazil, the findings from Nicaragua and Colombia presented here suggest that CCTs do increase enrollment and to a lesser extent decrease absenteeism and retention, at least in the short term. The results of this dissertation show that the program model can be effective in very different contexts, even in very poor countries and countries with some degree of civil unrest.[53] Policymakers should be able to implement such a program, with context-specific modifications, for many communities in which the direct and opportunity costs of schooling are a chief factor in dropout

[53] As discussed in the historical context, Colombia does have a long history of democratic rule even in the face of civil unrest. It cannot be inferred that the CCT program would work in a country lacking both some level of basic infrastructure and a stable system of governance.

and non-attendance. This includes low income communities in developed countries. If designed carefully to reflect context, evaluated consistently and coupled with supply-side interventions where needed, CCTs can function even in places where there are very few resources.

Conditional cash transfer programs should not be expected to accomplish more than they aim to do: to provide cash to subsidize the cost of human capital investment and incentivize households and individuals to make that investment. They should not be perceived as the sole measure for applying social assistance within a country, nor the only solution for reducing poverty in the short or long-term. Further, the results of this dissertation suggests that while CCTs do a good job at encouraging enrollment, i.e. getting children to the door of the schoolhouse, there remains a large gap in explanatory power once children are in school. In other words, this research in no way suggests that the programs replace other reforms focusing on curriculum and instruction, teacher preparation, school governance and other more traditional education reforms. It does suggest, however, that CCTs might add a new dimension to the conversation around education and poverty. They have already done this on the international front, and are beginning to do so in the Western world. Though a good deal of research has been done to date, CCTs remain a ripe area for greater research, experimentation and program modification.

Appendix 1: Summary Tables

Enrollment

Table 77
Individual and community percentage enrollment by treatment group

	Control %	Treatment %	Difference %
Individuals			
Nicaragua, Baseline (2000)	67	64	3
Nicaragua , 2002	75	89	14**
Colombia, 2001 (retrospective)	83	85	2
Colombia, Baseline	77	85	8**
Colombia, After *Familias en Acción*	77	85	8**
Communities			
Nicaragua, Baseline (2000)	76	74	-2
Nicaragua , 2002	83	95	12**
Colombia, 2001 (retrospective)	78	85	7*
Colombia, Baseline	76	82	6**
Colombia, After *Familias en Acción*	77	81	4

Attendance

Table 78
Individual mean number of days missed by treatment group

	Control	Treatment	Difference (T-C)
Individuals			
Nicaragua, Baseline (2000)	2.6	3.1	0.5*
Nicaragua , 2002	1.6	0.6	-1.0**
Colombia, Baseline	4.1	3.3	0.8**
Colombia, After *Familias en Acción*	3.6	3.1	0.5**

Retention

Table 79
Individual retention rates by treatment group

	Control %	Treatment %	Difference (T-C)
Individuals			
Nicaragua, Baseline (2000)	13	12	-1
Nicaragua , 2002	15	8	-7**
Colombia, Baseline	21	18	3**
Colombia, After *Familias en Acción*	9	8	1

Schooling expectations

Table 80
Individual percentage of students with schooling expectations above primary school by treatment group

	Control %	Treatment %	Difference (T-C)
Individuals			
Nicaragua, Baseline (2000)	75	76	-1
Nicaragua , 2002	79	81	2
Colombia, Baseline	71	75	4**
Colombia, After *Familias en Acción**	67	72	5**

Note: Measurement at the end of the program was average estimation of the probability that child would graduate secondary school

Regression Tables

Enrollment

Table 81
Individual Enrollment in Nicaragua & Colombia, Logistic Regression, B and (Standard errors)

	2000 Nicaragua	2002 Nicaragua	2001 Colombia	2003 Colombia	2006 Colombia
Ln pc total expenditure	0.494**	0.331	0.150*		
	(0.14)	(1.39)	(1.162)	0.128*	0.159**
					(0.065)
				(0.059)	
Community mean (ln per capita educational expenditure)	0.304	0.108	0.049	-0.059	-0.280
	(0.35)	(1.12)	(1.050)		(0.170)
				(0.149)	
Work dummy	- 1.920**	- 2.146**	-0.854**	-1.264**	-2.032**
	(-1.92)	(0.12)	(0.426)	(0.117)	(0.103)
Age	1.528**	3.031**	-0.742**	-1.041**	-0.268
	(1.55)	(20.7)	(0.476)	(0.240)	(0.251)
Age-squared	- 0.074 **	- 0.145**	0.012	0.020	-0.006
	(-0.07)	(0.87)	(1.012)	(0.009)	(0.009)
Secondary Expectations	0.216	0.759**	1.245**	1.565**	0.026**
	(0.13)	(2.14)	(3.472)	(0.120)	(0.006)
Community mean school distance	0.001	0.002	-	-	-
	(0.00)	(1.00)			
Mother's educational level	0.176**	0.315**	0.036**	0.040**	0.035**
	(0.04)	(1.37)	(1.037)	(0.005)	(0.005)
Mother present	-0.035	-0.056	-	-	-
	(0.24)	(0.95)			
Number of siblings	-0.023	0.037	-0.043	-0.041	-0.005
	(0.02)	(1.04)	(0.958)	(0.025)	(0.032)
Gender	0.104	0.021	-0.253**	-	-0.121
	(0.13)	(1.03)	(0.777)	0.357**	(0.063)
				(0.061)	
Community frequency of students in a multi-grade classroom/ Students per classroom	0.004	-0.003	0.755*	0.397	
	(0.00)	(0.99)	(2.213)	(0.250)	0.050**
					(0.018)
RPS participation "Acceptance"	-0. 023	1.361**	0.245	0.703**	
	(-0.01)	(3.90)	(1.278)	(0.139)	0.472**
					(0.142)
Number of cases	1689	1715	10,157	10,832	11,622
Wald chi2(13)	184.09**	234.6**	936.21**	1126.28 **	1200.65
Pseudo R2	0.13	0.2131	0.205	0.277	0.2419

Notes: *Significant at 5% level, ** significant at 1% level.

Table 82
Individual enrollment in Nicaragua & Colombia, Logistic Regression, Marginal Effects

	2000 Nicaragua	2002 Nicaragua	2001 Colombia	2003 Colombia	2006 Colombia
Ln pc total expenditure	0.081**	0.017	0.147*	0.155*	0.207**
Community mean (ln per capita educational expenditure)	0.049	0.006	0.050	-0.074	-0.337
Work dummy	-0.415**	-0.245**	-0.112**	-0.217**	-0.382**
Age	0.249**	0.155**	-0.074**	-0.128**	-0.031
Age-squared	-0.012**	-0.007	0.001	0.002	-0.001
Secondary Expectations	0.035	0.039	0.146	0.225	0.003
Community mean school distance	0.000	0.000	-0.004**	-0.005**	-0.004**
Mother's educational level	0.029**	0.016**	0.004**	0.005**	0.004**
Mother present	-0.006	-0.003	-0.025**	-0.043**	-0.014
Number of siblings	0.004	0.002	-0.004	-0.005	-0.001
Gender	0.017	0.001	0.076	0.049	0.006
Community frequency of students in a multi-grade classroom/ Students per classroom	0.000	-0.000	0.026	0.098**	0.056**
RPS participation "Acceptance"	-0.004	0.073**			
Number of cases	1689	1715	10,157	10,832	11,622

Notes: *Significant at 5% level, ** significant at 1% level.

Table 83
Individual enrollment in Nicaragua & Colombia, Logistic Regression, Odds Ratios

	2000 Nicaragua	2002 Nicaragua	2001 Colombia	2003 Colombia	2006 Colombia
Ln pc total expenditure	1.64**	1.39	1.162*	1.137*	1.172**
Community mean (ln per capita educational expenditure)	1.35	1.12	1.050	0.943	0.756
Work dummy	0.15**	0.12**	0.426**	0.283**	0.131**
Age	4.61**	20.7**	0.476**	0.353**	0.765
Age-squared	0.93**	0.87**	1.012	1.020	0.993
Secondary Expectations	1.25	2.14**	3.472**	4.783**	1.026**
Community mean school distance	1.00	1.00	-	-	-
Mother's educational level	1.19.**	1.37*	1.037**	1.041**	1.035**
Mother present	0.97	0.95	-	-	-
Number of siblings	1.02	1.04	0.958	0.960	0.995
Gender	1.11	1.03	0.777**	0.699**	0.886
Community frequency of students in a multi-grade classroom/ Students per classroom	1.00	0.99	2.213*	1.488	1.051**
RPS participation "Acceptance"	0.98	3.90**	1.278	2.020**	1.602**
Number of cases	1689	1715	10,157	10,832	11,622

Notes: *Significant at 5% level, ** significant at 1% level.

Table 84
Community model. Enrollment in Nicaragua & Colombia, Linear Regression, B and Standard errors

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln Average total spending per capita	-3.868 (0.793)	0.620 (4.490)	2.961 (3.360)	-0.035** (0.269)
Mean Hours worked last week	5.450* (0.037)	0.227 (0.200)	-5.967** (1.808)	0.000** (0.000)
Age	26.882 (0.830)	1.779 (1.108)	36.791* (16.017)	1.426** (0.391)
Age-squared	-0.072 (0.991)	-91.714* (44.982)	-1.815** (0.650)	-0.057** (0.014)
Community mean school distance	0.057 (0.058)	4.747 (2.219)	11.941** (2.137)	0.003** (0.001)
Mean Mother's educational level	8.919 (0.119)	-0.008* (0.021)	1.086** (0.383)	0.011* (0.005)
Average % mother present in home	0.748 (0.154)	6.321 (3.010)	-	-
Number of siblings	2.478 (0.655)	1.131 (2.719)	1.898 (2.322)	-0.006 (0.032)
Community frequency of students in multigrade classrooms/ mean number of students per classroom	-0.105 (0.519)	-0.008 (0.082)	-4.066 (3.319)	0.008** (0.003)
RPS Treatment or Control	-1.593 (0.718)	10.707** (2.977)	4.802** (1.403)	0.036** (0.021)
Number of cases	42	42	122	120
F	5.52**	4.47**	12.367**	7.39**
R Square	0.470	0.570	0.450	0.422

Notes: *Significant at 5% level, ** significant at 1% level.

Attendance

Table 85
Individuals in Nicaragua & Colombia, Logistic Regression, B and (Standard errors)

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	0.010	0.129	0.050	0.035
	(0.156)	(0.21)	(0.046)	(0.062)
Community mean (ln per capita	-0.120	0.193	-0.030	-0.094
educational expenditure)	(0.243)	(0.145)	(0.149)	(0.279)
Work dummy	0.835**	0.816**	-0.004	0.392**
	(0.282)	(0.260)	(0.148)	(0.148)
Age	-0.220	-0.181	0.157	-0.082
	(0.010)	(0.413)	(0.159)	(0.134)
Age-squared	0.010	0.007	-0.006	0.004
	(0.181)	(0.021)	(0.006)	(0.005)
Secondary Expectations	-0.082	-0.239	-0.145	0.008
	(0.001)	(0.144)	(0.082)	(0.011)
Community mean school	-0.004**	0.001	-	-
distance	(0.007)	(0.001)		
Mother's educational level	-0.035	-0.057	-0.008	-0.003
	(0.037)	(0.041)	(0.004)	(0.005)
Mother present	0.116	0.331	-	-
	(0.218)	(0.294)		
Number of siblings	-0.065**	0.007	0.007	0.031
	(0.027)	(0.027)	(0.024)	(0.026)
Gender	-0.006	0.043	0.122*	0.092*
	(0.133)	(0.146)	(0.051)	(0.045)
Community frequency of	0.000	-0.009*	0.008	0.046
students in a multi-grade	(0.298)	(0.004)	(0.020)	(0.024)
classroom/ Students per				
classroom				
RPS participation "Acceptance"	0.267*	-1.058**	-0.328**	-0.402
	(0.243)	(0.170)	(0.127)	(0.252)
Number of cases	1291	1542	8381	9 ,368
Wald chi2(13)	41.79**	65.37**	28.03**	31.66**
Pseudo R2	0.030	0.0451	0.005	0.0165

Notes: *Significant at 5% level, ** significant at 1% level.

Table 86
Individual attendance in Nicaragua & Colombia, Logistic Regression, Marginal Effects

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	0.002	0.016	0.087	0.069
Community mean (ln per capita educational expenditure)	-0.028	0.025	-0.054	-0.171
Work dummy	0.204**	0.132**	-0.001	0.074**
Age	-0.051	-0.023	0.028	-0.014
Age-squared	0.002	0.001	-0.001	0.001
Secondary Expectations	-0.019	-0.030	-0.026	0.001
Community mean school distance	-0.001**	0.000	-	-
Mother's educational level	-0.008	-0.007	-0.001	-0.001
Mother present	0.027	0.038	-	-
Number of siblings	-0.015**	0.001	0.001	0.005
Gender	-0.001	0.005	0.022*	0.016*
Community frequency of students in a multi-grade classroom/ Students per classroom	0.000	-0.001	0.001	0.008
RPS participation "Acceptance"	0.113*	-0.139**	-0.061**	-0.071
Number of cases	1291	1542	8381	9368

Notes: *Significant at 5% level, ** significant at 1% level.

Table 87
Individual attendance in Nicaragua & Colombia, Logistic Regression, Odds Ratios

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	1.010	1.138	1.052	1.036
Community mean (ln per capita educational expenditure)	0.885	1.213	0.971	0.910
Work dummy	2.305**	2.262**	0.996	1.480**
Age	0.803	0.835	1.170	0.921
Age-squared	1.010	1.007	0.994	1.004
Secondary Expectations	0.922	0.788	0.865	1.008
Community mean school distance	0.996**	1.001	-	-
Mother's educational level	0.965	0.944	0.992	0.997
Mother present	1.123	1.393	-	-
Number of siblings	0.938**	1.007	1.007	1.032
Gender	0.994	1.044	1.130*	1.096*
Community frequency of students in a multi-grade classroom/ Students per classroom	1.000	0.991	1.008	1.047
RPS participation "Acceptance"	1.306*	0.347**	0.721**	0.669
Number of cases	1291	1542	8381	9368

Notes: *Significant at 5% level, ** significant at 1% level.

Table 88
Community model. Attendance in Nicaragua & Colombia, Linear Regression, B and Standard errors

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln Average total spending per capita	11.398 (24.629)	8.879 (7.486)	-0.613 (0.430)	-0.126 (0.526)
Mean Hours worked last week	-4.364 (4.868)	-0.387 (1.851)	0.000 (0.364)	0.015** (0.002)
Age	-38.497 (194.468)	-5.787 (93.275)	-0.711 (3.430)	16.820 (12.418)
Age-squared	1.068 (9.793)	0.382 (4.609)	0.000 (0.142)	-0.582 (0.444)
Community mean school distance	-0.100 (0.561)	-0.025 (0.034)	0.629 (0.438)	-0.004 (0.018)
Mean Mother's educational level	-10.598 (11.041)	-4.239 (4.211)	0.000 (0.071)	0.056 (0.129)
Average % mother present in home	-0.309 (0.812)	-0.295 (0.388)	-	-
Number of siblings	11.152 (7.984)	-4.804 (4.352)	0.568 (0.65)	0.304 (1.040)
Community frequency of students in multigrade classrooms/ mean number of students per classroom	0.155 (0.273)	-0.093 (0.087)	-0.138 (0.615)	-0.064 (0.044)
RPS Treatment or Control	6.143 (6.269)	-13.698** (3.944)	-0.431 (0.261)	0.157 (0.466)
Number of cases	42	42	127	118
F	1.41	2.57*	1.036	3.08**
R Square	0.222	0.383	0.075	0.107

Notes: *Significant at 5% level, ** significant at 1% level.

Retention

Table 89
Individuals in Nicaragua & Colombia, Logistic Regression, B and (Standard errors)

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	-0.238	0.087	-0.008	-0.083
	(0.194)	(0.156)	(0.060)	(0.089)
Community mean (ln per capita	0.176	-0.017	-0.129	-0.231**
educational expenditure)	(0.262)	(0.244)	(0.236)	(0.058)
Work dummy	-0.474	-0.397	0.255	-0.034
	(0.321)	(0.267)	(0.164)	(0.268)
Age	-0.220	-2.771**	-0.554**	-0.236
	(0.465)	(0.713)	(0.209)	(0.275)
Age-squared	0.007	0.143**	0.002**	0.008
	(0.024)	(0.237)	(0.008)	(0.010)
Secondary Expectations	0.542**	-0.207	-0.649**	-0.008
	(0.188)	(0.209)	(0.097)	(0.005)
Community mean school	-0.001	0.001	-	-
distance	(0.002)	(0.002)		
Mother's educational level	0.022	0.083	-0.011*	- 0.016**
	(0.052)	(0.070)	(0.005)	(0.006)
Mother present	0.249	0.580	-	-
	(0.424)	(0.327)		
Number of siblings	-0.007	0.022	0.053	0.080
	(0.038)	(0.033)	(0.030)	(0.053)
Gender	-0.076	-0.476**	0.205**	0.629
	(0.190)	(0.177)	(0.060)	(0.084)
Community frequency of students in a multi-grade classroom/ Students per classroom	-0.010	-0.020**	-1.065*	-0.000
	(0.010)	(0.007)	(0.558)	(0.013)
RPS participation "Acceptance"	0.111	0.480	-0.191	-0.131
	(0.269)	(0.298)	(0.257)	(0.112)
Number of cases	1291	1542	8363	7173
Wald chi2(13)	23.06*	49.01**	113.99**	105.40**
Pseudo R2	0.0265	0.0753	0.031	0.0272

Notes: *Significant at 5% level, ** significant at 1% level.

Table 90
Individual retention in Nicaragua & Colombia, Logistic Regression, Marginal Effects

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	-0.025	0.008	-0.011	0.071
Community mean (ln per capita educational expenditure)	0.018	-0.002	-0.183	0.172**
Work dummy	-0.058	-0.038	0.038	0.002
Age	-0.023	-0.229**	-0.077**	0.018
Age-squared	0.001	0.012**	0.003**	-0.001
Secondary Expectations	0.055**	-0.017	-0.098	0.001
Community mean school distance	-0.000	0.000	-	-
Mother's educational level	0.002	0.007	-0.002*	0.001**
Mother present	0.028	0.059	-	-
Number of siblings	-0.000	0.002	0.007	0.006
Gender	-0.008	-0.040**	0.028**	-0.047
Community frequency of students in a multi-grade classroom/ Students per classroom	-0.001	-0.002**	-0.148*	0.000
RPS participation "Acceptance"	0.012	0.040	-0.027	0.010
Number of cases	1291	1542	8363	7173

Notes: *Significant at 5% level, ** significant at 1% level.

Table 91
Individual retention in Nicaragua & Colombia, Logistic Regression, Odds Ratios

	2000 Nicaragua	2002 Nicaragua	2003 Colombia	2006 Colombia
Ln pc total expenditure	0.79	1.09	0.991	1.087
Community mean (ln per capita educational expenditure)	1.19	0.98	0.879	1.259**
Work dummy	0.62	0.67	1.289	1.036
Age	0.80	0.06**	0.574**	1.267
Age-squared	1.01	1.15**	1.022**	0.992
Secondary Expectations	1.72**	0.81	0.523	1.008
Community mean school distance	0.10	1.00	-	-
Mother's educational level	1.02	1.09	0.989*	1.016**
Mother present	1.28	1.79	-	-
Number of siblings	0.10	1.02	1.054	1.038
Gender	0.93	0.62**	1.227**	0.533
Community frequency of students in a multi-grade classroom/ Students per classroom	0.10	0.98**	0.345*	1.000
RPS participation "Acceptance"	1.12	1.62	0.826	1.139
Number of cases	1291	1542	8363	7173

Notes: *Significant at 5% level, ** significant at 1% level.

Table 92
Community model. Retention in Nicaragua, Linear Regression, B and Standard errors

	2000 Nicaragua	2002 Nicaragua
Ln Average total spending per capita	13.897	8.578
	(11.450)	(5.310)
Mean Hours worked last week	1.177	-2.207**
	(2.566)	(0.731)
Age	-24.187	156.63
	(87.194)	(70.265)
Age-squared	0.944	-7.860*
	(4.441)	(3.487)
Community mean school distance	-0.019	-0.027
	(0.024)	(0.022)
Mean Mother's educational level	-1.390	-1.147
	(3.385)	(2.641)
Average % mother present in home	0.028	-0.000
	(0.292)	(0.240)
Number of siblings	1.490	-2.551
	(4.421)	(3.565)
Community frequency of students in multigrade classrooms/ mean number of students per classroom	0.183	0.134
	(0.119)	(0.076)
RPS Treatment or Control	-1.070	-6.257*
	(3.844)	(2.421)
Number of cases	42	42
F	0.65	7.42**
R Square	0.118	0.473

Notes: *Significant at 5% level, ** significant at 1% level.

Secondary expectations

Table 93
Individuals in Nicaragua & Colombia, Logistic Regression, B and (Standard errors)

	2000 Nicaragua	2002 Nicaragua	2003 Colombia
Ln pc total expenditure	-0.076	-0.085	0.269**
	(0.160)	(0.135)	(0.577)
Community mean (ln per capita educational expenditure)	-0.157	-0.029	0.338
	(0.247)	(0.226)	(0.246)
Work dummy	0.106	0.400	-0.666**
	(0.252)	(0.341)	(0.093)
Age	-0.155	-0.145	0.470**
	(0.329)	(0.224)	(0.106)
Age-squared	0.008	0.006	-0.018**
	(0.017)	(0.011)	(0.004)
Community mean school distance	0.002	0.002	-
	(0.002)	(0.002)	
Mother's educational level	-0.058	-0.015	0.019**
	(0.041)	(0.041)	(0.005)
Mother present	-0.150	0.001	-
	(0.284)	(0.275)	
Number of siblings	-0.006	0.043	0.028
	(0.033)	(0.032)	(0.242)
Gender	-0.014	0.098	-0.109**
	(0.119)	(0.104)	(0.416)
Community frequency of students in a multi-grade classroom/ Students per classroom	0.002	-0.002	0.046
	(0.006)	(0.009)	(0.341)
RPS participation "Acceptance"	-0.348	-0.149	0.145
	(-0.348)	(0.305)	(0.187)
Number of cases	1291	1542	10,850
Wald chi2(13)	17.42	13.45	113.69**
Pseudo R2	0.0161	0.0125	0.0293

Notes: *Significant at 5% level, ** significant at 1% level.

Table 94
Individual secondary expectations in Nicaragua & Colombia, Logistic Regression, Marginal Effects

	2000 Nicaragua	2002 Nicaragua	2003 Colombia
Ln pc total expenditure	-0.019	-0.021	0.609**
Community mean (ln per capita educational expenditure)	-0.038	-0.007	0.798
Work dummy	0.026	0.099	-0.162**
Age	-0.038	-0.036	0.109**
Age-squared	0.002	0.001	-0.004**
Community mean school distance	0.001	-0.001	-
Mother's educational level	-0.014	-0.004	0.004**
Mother present	-0.037	0.002	-
Number of siblings	-0.001	0.011	0.007
Gender	-0.004	0.025	-0.025**
Community frequency of students in a multi-grade classroom/ Students per classroom	0.001	-0.000	0.011
RPS participation "Acceptance"	-0.085	-0.037	0.034
Number of cases	1291	1542	10,850

Notes: *Significant at 5% level, ** significant at 1% level.

Table 95
Individual retention in Nicaragua & Colombia, Logistic Regression, Odds Ratios

	2000 Nicaragua	2002 Nicaragua	2003 Colombia
Ln pc total expenditure	0.93	0.918	1.309**
Community mean (ln per capita educational expenditure)	0.85	0.971	1.403
Work dummy	1.11	1.492	0.514**
Age	0.86	0.865	1.600**
Age-squared	1.01	1.006	0.982**
Community mean school distance	1.00	0.998	-
Mother's educational level	0.94	0.985	1.020**
Mother present	0.86	1.001	-
Number of siblings	0.99	1.044	1.029
Gender	0.99	1.103	0.897**
Community frequency of students in a multi-grade classroom/ Students per classroom	1.00	0.998	1.047
RPS participation "Acceptance"	0.7	0.862	1.156
Number of cases	1291	1542	10,850

Notes: *Significant at 5% level, ** significant at 1% level.

Table 96
Individual Model. End of Implementation (2006). Effect of *Familias en Acción* on schooling expectations.

	B	S.E. (robust, clustered)
Ln pc total expenditure	2.116**	0.837
Community mean ln per capita educational expenditure	-7.865**	1.981
Work dummy	-5.971	6.060
Age	0.853	4.122
Age-squared	-0.154	0.165
Age mother left school	0.234**	0.076
Number of siblings	0.192	0.457
Gender	-0.784	1.088
Community mean number of students per classroom	1.227**	0.252
Program participation (treatment)	5.420**	1.984
Number of cases	2403	
F	17.31**	
R-squared	0.0834	

Appendix 2: Correlations matrices

Nicaragua Individual Level Correlation Matrix at Baseline, Dependents Included

Correlations

		Mom's last grade reached	Dummy - Mom home	Dummy -Dad home	Numero de personas en hogar	Sexo	Ln Gast anual TOTAL PC C$	Dummy - expect secondary	Distancia a escuela (MTS)	En una aula multigrado (%)	Dummy for worked or not	Anos cumplidos	YEARC_SQ	ln pc Educational (calculated)	Acepto el programa en asamblea	Matriculo este ano escolar	Dummy - Missed any days or not?	1st time in current grade?
Mom's last grade reached	Pearson Correlation	1	.051*	.049*	-.234**	-.022	.257**	-.037	-.005	-.075**	-.071**	-.028	-.028	.154**	.013	.145**	-.010	.012
	Sig. (2-tailed)	.	.034	.043	.000	.354	.000	.129	.824	.002	.003	.238	.249	.000	.599	.000	.727	.671
	N	1742	1711	1711	1742	1742	1742	1728	1742	1742	1721	1742	1742	1742	1742	1727	1320	1320
Dummy - Mom home	Pearson Correlation	.051*	1	.387**	.072**	-.035	-.117**	-.020	-.017	.019	-.010	.019	.019	-.055*	-.028	-.014	.008	.018
	Sig. (2-tailed)	.034	.	.000	.001	.114	.000	.375	.441	.388	.671	.391	.392	.014	.203	.528	.767	.480
	N	1711	2011	2011	2011	2011	2011	1987	2011	2011	1977	2011	2011	2011	2011	1986	1479	1479
Dummy -Dad home	Pearson Correlation	.049*	.387**	1	.104**	.043	-.011	.018	.021	.018	-.020	-.043	-.042	-.062**	.013	.028	-.046	.015
	Sig. (2-tailed)	.043	.000	.	.000	.052	.629	.434	.348	.411	.374	.053	.061	.006	.557	.217	.079	.572
	N	1711	2011	2011	2011	2011	2011	1987	2011	2011	1977	2011	2011	2011	2011	1986	1479	1479
Numero de personas en hogar	Pearson Correlation	-.234**	.072**	.104**	1	.008	-.321**	.027	-.056*	.069**	.023	.039	.035	-.014	-.046*	-.041	-.050	.015
	Sig. (2-tailed)	.000	.001	.000	.	.715	.000	.226	.011	.002	.294	.081	.113	.530	.038	.063	.052	.563
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Sexo	Pearson Correlation	-.022	-.035	.043	.008	1	.018	-.001	.040	-.016	.226**	.008	.011	.002	.019	-.042	.020	-.030
	Sig. (2-tailed)	.354	.114	.052	.715	.	.409	.977	.069	.477	.000	.706	.624	.921	.395	.058	.444	.244
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Ln Gast anual TOTAL PC C$	Pearson Correlation	.257**	-.117**	-.011	-.321**	.018	1	.018	.130**	-.175**	-.046*	.026	.026	.221**	.012	.191**	-.005	-.024
	Sig. (2-tailed)	.000	.000	.629	.000	.409	.	.416	.000	.000	.040	.236	.245	.000	.577	.000	.849	.350
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Dummy - expect secondary	Pearson Correlation	-.037	-.020	.018	.027	-.001	.018	1	.019	-.015	-.008	.017	.018	-.019	-.059**	.034	-.029	.067**
	Sig. (2-tailed)	.129	.375	.434	.226	.977	.416	.	.400	.500	.730	.441	.429	.400	.008	.124	.260	.009
	N	1728	1987	1987	2028	2028	2028	2028	2028	2028	2018	2028	2028	2028	2028	2027	1508	1508
Distancia a escuela (MTS)	Pearson Correlation	-.005	-.017	.021	-.056*	.040	.130**	.019	1	-.103**	-.072**	-.008	-.008	.177**	.024	.118**	-.124**	.001
	Sig. (2-tailed)	.824	.441	.348	.011	.069	.000	.400	.	.000	.001	.709	.734	.000	.268	.000	.000	.982
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
En una aula multigrado (%)	Pearson Correlation	-.075**	.019	.018	.069**	-.016	-.175**	-.015	-.103**	1	.046*	-.006	-.004	-.375**	.019	-.071**	.047	-.065*
	Sig. (2-tailed)	.002	.388	.411	.002	.477	.000	.500	.000	.	.041	.793	.873	.000	.379	.001	.066	.011
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Dummy for worked or not	Pearson Correlation	-.071**	-.010	-.020	.023	.226**	-.046*	-.008	-.072**	.046*	1	.268**	.273**	-.082**	-.012	-.300**	.113**	-.063*
	Sig. (2-tailed)	.003	.671	.374	.294	.000	.040	.730	.001	.041	.	.000	.000	.000	.605	.000	.000	.014
	N	1721	1977	1977	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2017	1501	1501
Anos cumplidos	Pearson Correlation	-.028	.019	-.043	.039	.008	.026	.017	-.008	-.006	.268**	1	.996**	.029	-.014	-.018	-.001	-.058*
	Sig. (2-tailed)	.238	.391	.053	.081	.706	.236	.441	.709	.793	.000	.	.000	.185	.535	.430	.971	.023
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
YEARC_SQ	Pearson Correlation	-.028	.019	-.042	.035	.011	.026	.018	-.008	-.004	.273**	.996**	1	.027	-.012	-.028	.001	-.058*
	Sig. (2-tailed)	.249	.392	.061	.113	.624	.245	.429	.734	.873	.000	.000	.	.217	.587	.210	.979	.023
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
ln pc Educational (calculated)	Pearson Correlation	.154**	-.055*	-.062**	-.014	.002	.221**	-.019	.177**	-.375**	-.082**	.029	.027	1	.066**	.145**	-.065*	.060*
	Sig. (2-tailed)	.000	.014	.006	.530	.921	.000	.400	.000	.000	.000	.185	.217	.	.003	.000	.012	.019
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Acepto el programa en asamblea	Pearson Correlation	.013	-.028	.013	-.046*	.019	.012	-.059**	.024	.019	-.012	-.014	-.012	.066**	1	-.031	.057*	.005
	Sig. (2-tailed)	.599	.203	.557	.038	.395	.577	.008	.268	.379	.605	.535	.587	.003	.	.157	.028	.847
	N	1742	2011	2011	2052	2052	2052	2028	2052	2052	2018	2052	2052	2052	2052	2027	1508	1508
Matriculo este ano escolar	Pearson Correlation	.145**	-.014	.028	-.041	-.042	.191**	.034	.118**	-.071**	-.300**	-.018	-.028	.145**	-.031	1	.[a]	.[a]
	Sig. (2-tailed)	.000	.528	.217	.063	.058	.000	.124	.000	.001	.000	.430	.210	.000	.157	.	.	.
	N	1727	1986	1986	2027	2027	2027	2027	2027	2027	2017	2027	2027	2027	2027	2027	1508	1508
Dummy - Missed any days or not?	Pearson Correlation	-.010	.008	-.046	-.050	.020	-.005	-.029	-.124**	.047	.113**	-.001	.001	-.065*	.057*	.[a]	1	-.092**
	Sig. (2-tailed)	.727	.767	.079	.052	.444	.849	.260	.000	.066	.000	.971	.979	.012	.028	.	.	.000
	N	1320	1479	1479	1508	1508	1508	1508	1508	1508	1501	1508	1508	1508	1508	1508	1508	1508
1st time in current grade?	Pearson Correlation	.012	.018	.015	.015	-.030	-.024	.067**	.001	-.065*	-.063*	-.058*	.060*	.005	.[a]	-.092**	1	
	Sig. (2-tailed)	.671	.480	.572	.563	.244	.350	.009	.982	.011	.014	.023	.023	.019	.847	.	.000	.
	N	1320	1479	1479	1508	1508	1508	1508	1508	1508	1501	1508	1508	1508	1508	1508	1508	1508

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Colombia Individual Level Correlation Matrix at Baseline, Dependents Included

Correlations

		Enrollment - Studying currently?	missed any days last month?	age mom left school	NUM_SIBS	GENDER - el sexo del miembro del hogar es	LNPCWKLY	C_NUMSTU	C_LNPCED	WK_DUMMY	Age	Age_sq	SEC_EXPT	TREAT
Enrollment - Studying currently?	Pearson Correlation	1	.[a]	.118	-.048	-.084	.073	.005	.016	-.256	-.341	-.359	.221	.090
	Sig. (2-tailed)	.	.	.000	.000	.000	.000	.513	.043	.000	.000	.000	.000	.000
	N	16165	13748	14570	16165	16165	16069	16165	16165	10658	16165	16165	16161	12536
missed any days last month?	Pearson Correlation	.[a]	1	-.001	-.023	.023	.017	.013	-.009	.007	-.032	-.030	-.011	-.064
	Sig. (2-tailed)	.	.	.891	.007	.006	.041	.125	.279	.530	.000	.000	.209	.000
	N	13748	13776	12391	13776	13776	13698	13776	13776	8553	13776	13776	13776	10850
age mom left school	Pearson Correlation	.118	-.001	1	-.091	-.010	.133	-.048	.090	-.031	-.038	-.039	.089	-.020
	Sig. (2-tailed)	.000	.891	.	.000	.216	.000	.000	.000	.002	.000	.000	.000	.030
	N	14570	12391	14770	14770	14770	14679	14770	14770	9840	14770	14770	14595	11480
NUM_SIBS	Pearson Correlation	-.048	-.023	-.091	1	.029	-.435	.188	-.125	.038	.058	.053	-.020	-.034
	Sig. (2-tailed)	.000	.007	.000	.	.000	.000	.000	.000	.000	.000	.000	.011	.000
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
GENDER - el sexo del miembro del hogar es	Pearson Correlation	-.084	.023	-.010	.029	1	-.010	.027	-.020	.128	.052	.052	-.020	-.021
	Sig. (2-tailed)	.000	.006	.216	.000	.	.216	.000	.009	.000	.000	.000	.011	.018
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
LNPCWKLY	Pearson Correlation	.073	.017	.133	-.435	-.010	1	-.080	.167	-.028	-.014	-.010	.119	.030
	Sig. (2-tailed)	.000	.041	.000	.000	.216	.	.000	.000	.004	.064	.206	.000	.001
	N	16069	13698	14679	16427	16427	16427	16427	16427	10655	16427	16427	16093	12736
C_NUMSTU	Pearson Correlation	.005	.013	-.048	.188	.027	-.080	1	-.550	-.005	-.017	-.016	-.026	-.154
	Sig. (2-tailed)	.513	.125	.000	.000	.000	.000	.	.000	.599	.031	.042	.001	.000
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
C_LNPCED	Pearson Correlation	.016	-.009	.090	-.125	-.020	.167	-.550	1	-.007	.034	.034	.091	.037
	Sig. (2-tailed)	.043	.279	.000	.000	.009	.000	.000	.	.477	.000	.000	.000	.000
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
WK_DUMMY	Pearson Correlation	-.256	.007	-.031	.038	.128	-.028	-.005	-.007	1	.196	.201	-.070	.010
	Sig. (2-tailed)	.000	.530	.002	.000	.000	.004	.599	.477	.	.000	.000	.000	.386
	N	10658	8553	9840	10716	10716	10655	10716	10716	10716	10716	10716	10670	8270
Age	Pearson Correlation	-.341	-.032	-.038	.058	.052	-.014	-.017	.034	.196	1	.993	.030	-.014
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.064	.031	.000	.000	.	.000	.000	.115
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
Age_sq	Pearson Correlation	-.359	-.030	-.039	.053	.052	-.010	-.016	.034	.201	.993	1	.025	-.013
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.206	.042	.000	.000	.000	.	.001	.137
	N	16165	13776	14770	16525	16525	16427	16525	16525	10716	16525	16525	16190	12808
SEC_EXPT	Pearson Correlation	.221	-.011	.089	-.020	-.020	.119	-.026	.091	-.070	.030	.025	1	.028
	Sig. (2-tailed)	.000	.209	.000	.011	.011	.000	.001	.000	.000	.000	.001	.	.002
	N	16161	13776	14595	16190	16190	16093	16190	16190	10670	16190	16190	16190	12557
TREAT	Pearson Correlation	.090	-.064	-.020	-.034	-.021	.030	-.154	.037	.010	-.014	-.013	.028	1
	Sig. (2-tailed)	.000	.000	.030	.000	.018	.001	.000	.000	.386	.115	.137	.002	.
	N	12536	10850	11480	12808	12808	12736	12808	12808	8270	12808	12808	12557	12808

a. Cannot be computed because at least one of the variables is constant.

Colombia Municipal Correlation Matrix at Baseline, Dependents Included

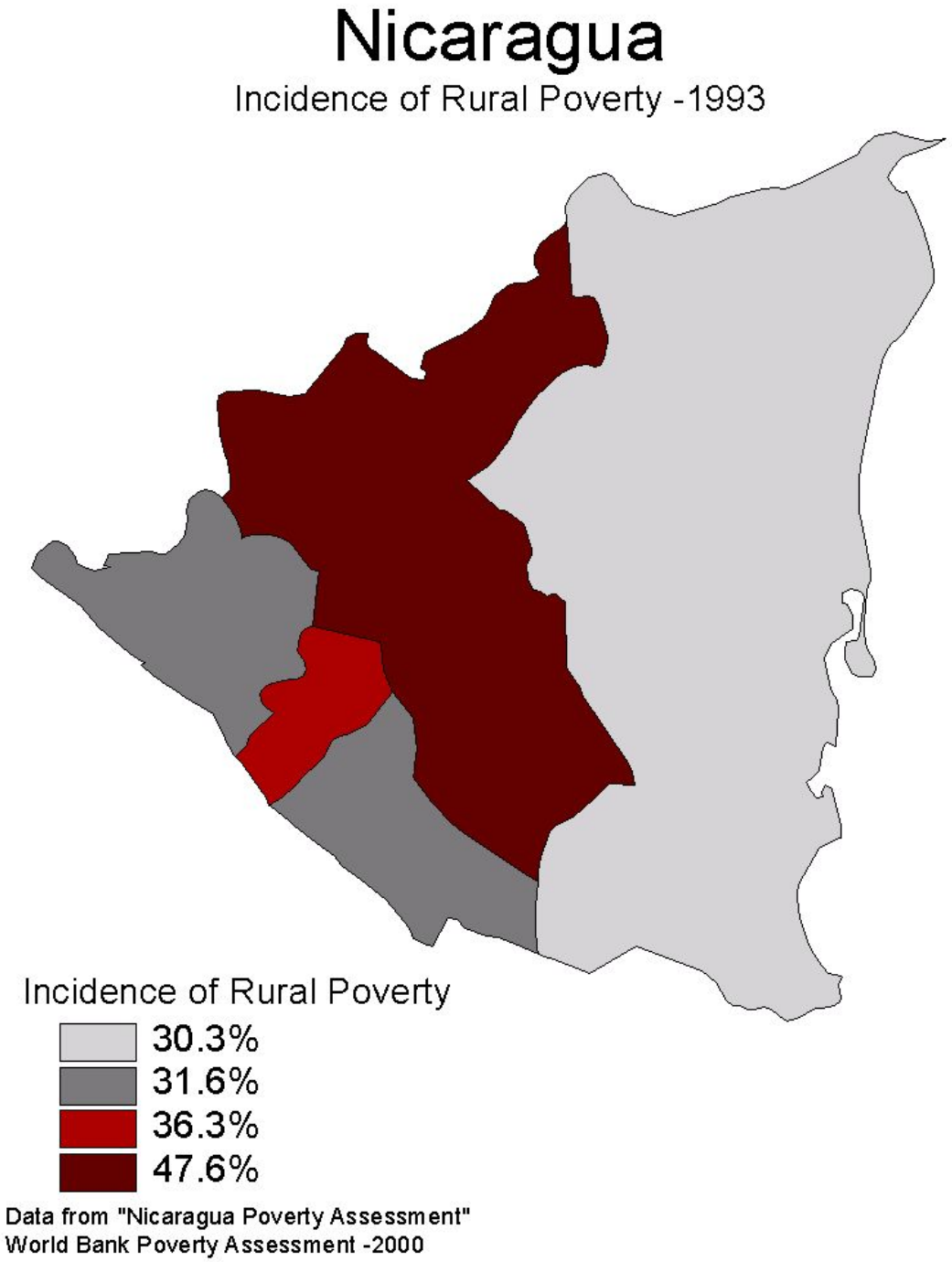
Correlations

		WK_DUM_1	WK_HOU_1	AGE_1	AGE_SQ_1	NUM_ST_1	MOM_ED_1	MOMAGL_1	NUM_SI_1	PC_EDU_1	PC_WKL_1	DAYSMI_1	ENROLL_1
WK_DUM_1	Pearson Correlation	1	.895**	.003	.032	-.103	-.024	-.062	-.115	.290**	.194*	-.090	-.279**
	Sig. (2-tailed)	.	.000	.975	.718	.250	.788	.485	.198	.001	.029	.320	.001
	N	127	127	127	127	127	127	127	127	127	127	125	127
WK_HOU_1	Pearson Correlation	.895**	1	.015	.039	-.215*	-.006	-.084	-.105	.231**	.042	-.060	-.401**
	Sig. (2-tailed)	.000	.	.866	.662	.015	.944	.346	.238	.009	.637	.509	.000
	N	127	127	127	127	127	127	127	127	127	127	125	127
AGE_1	Pearson Correlation	.003	.015	1	.994**	.135	.054	.061	-.135	.344**	.182*	.046	-.227*
	Sig. (2-tailed)	.975	.866	.	.000	.130	.546	.493	.130	.000	.041	.607	.010
	N	127	127	127	127	127	127	127	127	127	127	125	127
AGE_SQ_1	Pearson Correlation	.032	.039	.994**	1	.126	.053	.066	-.167	.343**	.198*	.046	-.255**
	Sig. (2-tailed)	.718	.662	.000	.	.158	.553	.463	.061	.000	.025	.610	.004
	N	127	127	127	127	127	127	127	127	127	127	125	127
NUM_ST_1	Pearson Correlation	-.103	-.215*	.135	.126	1	-.109	-.040	.149	.281**	.179*	-.180*	.352**
	Sig. (2-tailed)	.250	.015	.130	.158	.	.224	.658	.094	.001	.045	.045	.000
	N	127	127	127	127	127	127	127	127	127	127	125	127
MOM_ED_1	Pearson Correlation	-.024	-.006	.054	.053	-.109	1	.764**	-.399**	.254**	.099	-.206*	.017
	Sig. (2-tailed)	.788	.944	.546	.553	.224	.	.000	.000	.004	.270	.021	.848
	N	127	127	127	127	127	127	127	127	127	127	125	127
MOMAGL_1	Pearson Correlation	-.062	-.084	.061	.066	-.040	.764**	1	-.288**	.223*	.083	-.005	.232**
	Sig. (2-tailed)	.485	.346	.493	.463	.658	.000	.	.001	.012	.353	.957	.009
	N	127	127	127	127	127	127	127	127	127	127	125	127
NUM_SI_1	Pearson Correlation	-.115	-.105	-.135	-.167	.149	-.399**	-.288**	1	-.340**	-.149	.104	.038
	Sig. (2-tailed)	.198	.238	.130	.061	.094	.000	.001	.	.000	.094	.246	.669
	N	127	127	127	127	127	127	127	127	127	127	125	127
PC_EDU_1	Pearson Correlation	.290**	.231**	.344**	.343**	.281**	.254**	.223*	-.340**	1	.235**	-.130	.000
	Sig. (2-tailed)	.001	.009	.000	.000	.001	.004	.012	.000	.	.008	.148	.997
	N	127	127	127	127	127	127	127	127	127	127	125	127
PC_WKL_1	Pearson Correlation	.194*	.042	.182*	.198*	.179*	.099	.083	-.149	.235**	1	-.114	.088
	Sig. (2-tailed)	.029	.637	.041	.025	.045	.270	.353	.094	.008	.	.205	.324
	N	127	127	127	127	127	127	127	127	127	127	125	127
DAYSMI_1	Pearson Correlation	-.090	-.060	.046	.046	-.180*	-.206*	-.005	.104	-.130	-.114	1	.002
	Sig. (2-tailed)	.320	.509	.607	.610	.045	.021	.957	.246	.148	.205	.	.980
	N	125	125	125	125	125	125	125	125	125	125	125	125
ENROLL_1	Pearson Correlation	-.279**	-.401**	-.227*	-.255**	.352**	.017	.232**	.038	.000	.088	.002	1
	Sig. (2-tailed)	.001	.000	.010	.004	.000	.848	.009	.669	.997	.324	.980	.
	N	127	127	127	127	127	127	127	127	127	127	125	127

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

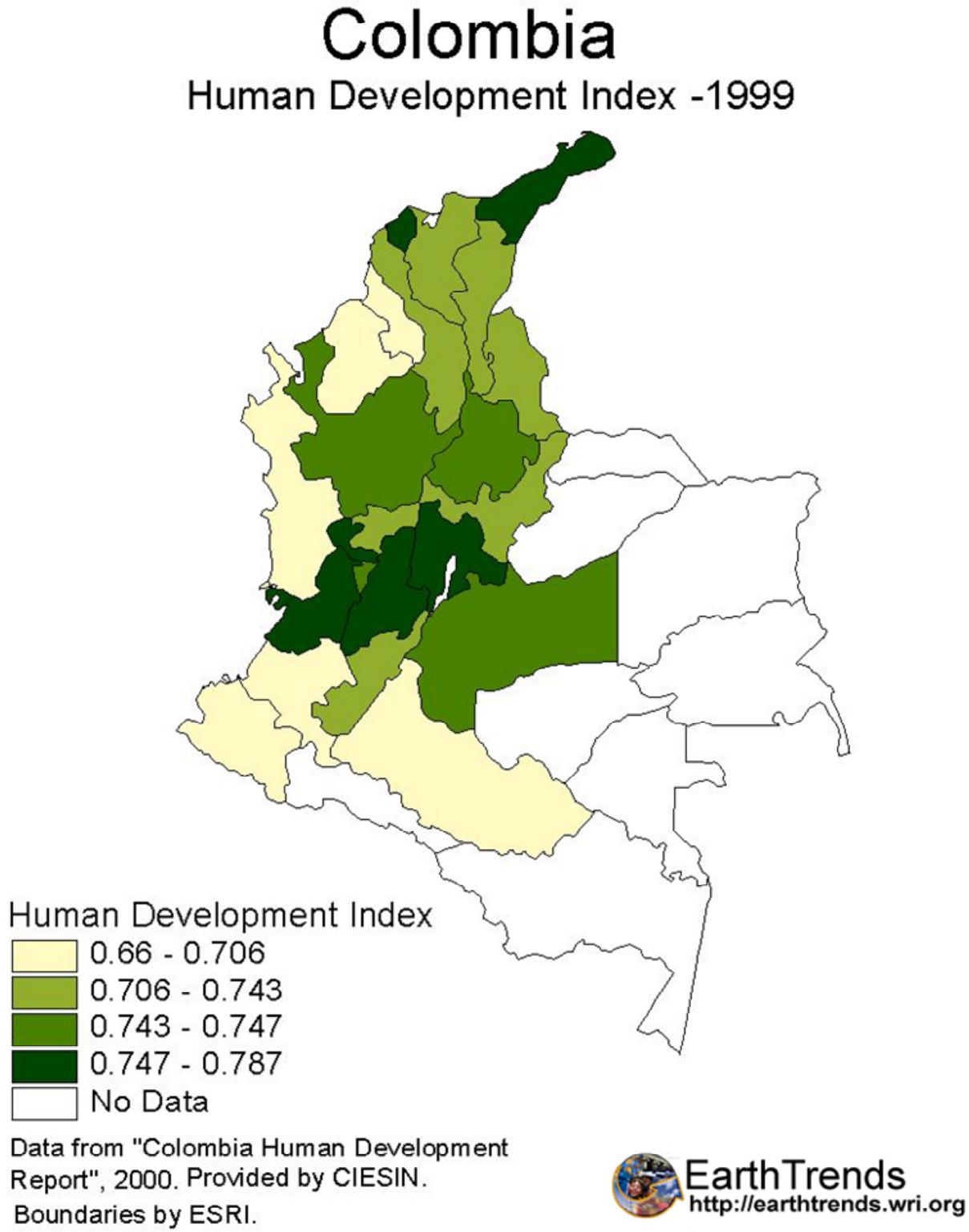
Appendix 3: Poverty maps, Nicaragua and Colombia



Source: http://earthtrends.wri.org/povlinks/map/m_65.php

Political Map of Nicaragua

Note: The two departments collected for the RPS pilot program are indicated by boxes on the map.



Source: http://earthtrends.wri.org/povlinks/map/m_83.php

Appendix 4: Demographic comparison, Mexico, Brazil, Colombia and Nicaragua

Demographic information reported for 2000 unless otherwise noted[1]	**Mexico**	**Brazil**	**Colombia**	**Nicaragua**
Population (in millions)	99.7	172.2	41.7	5.1
Dependency ratio (dependent population/100 productive persons)	62%	-	59%	80%
Fertility rate	2.5	2.2	2.6	3.2
Life expectancy	74	68	71	70
Literacy rate	91%	85%	93%	77%
GDP per capita (US dollars)	$9,197	$6,840	$5,945	$3,110
Proportion urban	75%	82%	71%	57%
Gini index of inequality[2]	50	58	59	43
Population living on less than $1 US a day[2]	5%	8%	7%	45%
Population living on less than $2 US a day[2]	20%	21%	18%	80%
Percent of population indigenous[3]	14%	0.4%	1.8%	5%
Percent of population Afro-descendent[3]	1%	45%	25%	13%
Percent of population with access to an improved water source[54]	97%	90%	93%	79%
Percent of population with access to improved sanitation	79%	75%	86%	47%
Educational statistics				
Average years of schooling, 2000 (population over 25) [3]	6.7	4.6	5.0	4.4
Adult self-reported literacy rate, Quintile 1 (year of survey	70%	67%	91%	60%

[54] Definition (United Nations) **improved" water sources**: household connections, public standpipes , boreholes ,protected dug wells , protected springs , rainwater collection . Joint Monitoring Program (JMP) for water supply and sanitation by the World Health Organization and UNICEF the following are considered as **"improved" sanitation**: connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine, ventilated improved pit latrine. Sanitation solutions that are not considered as "improved" are: public or shared latrines, open pit latrines , bucket latrines

ranges from 1998 to 2001) [3]				
Adult self-reported literacy rate, Quintile 5 (year of survey ranges from 1998 to 2001) [3]	99%	99%	99%	91%
School enrollment rate, ages 13 to 17, Quintile 1 (year of survey ranges from 1998 to 2001) [3]	57%	81%	66%	45%
School enrollment rate, ages 13 to 17, Quintile 5 (year of survey ranges from 1998 to 2001) [3]	90%	96%	85%	79%

1. *Source*: Pan American Health Organization, Health Analysis and Statistics Unit. Regional Core Health Data Initiative; Technical Health Information System. Washington DC, 2007.
2. *Source*: EarthTrends country poverty profiles. Mexico data taken in 2002. Colombia data taken in 2003. Nicaragua data taken in 2001
3. *Source*: deFerranti et al, 2004

Appendix 5: Comparison of CCT programs in Mexico, Colombia and Nicaragua

	Mexico	Colombia	Nicaragua
Name of Program	*Oportunidades/PROGRESA*	*Familias en Accion*	*Red de Protección Social*
Goal(s)	• Improve the conditions of education, health and nutrition of poor families, • particularly children and their mothers by providing: • Ensure that households have sufficient resources available so that their children can complete their basic education • Encourage the responsibility and active participation of parents and all family members in improving the education, health and nutrition of children and young people	• To complement the income of extremely poor families with young children; • To reduce non-attendance and drop-out rates among primary and high-school students; • To increase health care provision to children younger than 7 years old; • To improve health care practices in nutrition and early educational development.[55]	• To address future and current poverty; • To increase expenditure on food; decrease primary school dropouts; • To increase health care for young children
Pilot Year	1997	2000-2001; Baseline established 2002; Impact Evaluation 2004.	Baseline established 2000. Follow-ups in 2001 and 2002.
Financing	World Bank and Mexican government	Colombian government, World Bank and International Development Bank	Inter-American Development bank and Nicaraguan government
Total Amount of Funds	$700 million (1999)	US$88 million allotted in 2001; US$95 million in 2004	2000, US$11 million; 2002, US$22 million
Selection/Poverty Criterion	Early focus on rural areas; now expanded to urban. Most	20% poorest households – those classified as SISBENI	Focus on rural areas; six municipalities with a

[55] Source: Interregional Inequality Facility, (2006) Policy Brief #2. http://www.odi.org.uk/inter-regional_inequality/papers/Policy%20Brief%202%20-%20Colombia.pdf

	marginalized communities and individuals.		governance program in place
Target Treatment Population	Localities with high "Index of Marginalization" and individual households high in poverty	Households within selected villages registered with SISBENI[56] as of December 1999	Highly impoverished communities within rural areas in all 17 departments initially eligible.
Control Population	Communities/households already chosen to participate in the program, but phased in 18-20 months after the initial treatment groups began.	Municipalities chosen through propensity score matching.	Communities/households already chosen to participate in the program, but phased in after the initial treatment groups began.
Selection entity	Household	Household	Community
Method of Targeting	3-Stage Targeting: • Geographic targeting by municipality based on index of marginality • Questionnaire for selection of households within selected communities • Consensus by assembly of selected participants	Selection of Municipalities by FIP (Fondo de Inversiones para la Paz): • Municipalities chosen based on several criteria • Within municipality, SISBEN I registrants with children aged 0-17 eligible	3-Stage targeting: • Geographic targeting by municipality, based on poverty and infrastructure • 6 municipalities chosen, those participating in Microplanificación Participativa • communities within the municipalities chosen via Marginality Index from Census
Age of Children	≤22	≤ 17	≤ 13, and not above fourth

[56] Poorest segment (lowest 20%) of population based on SISBEN classification, primary targeting mechanism of Colombian government

			grade
Recipients of Funds	Mothers	Parents, with preference for mothers	Mothers, unless no mother available
Number of Recipient Communities	40,000 communities	622 municipalities	6 (for pilot) municipalities 42 communities
Number of Recipient Households	2,600,000 households	400,000 households	6,000 households
Community Infrastructure requirements	• School available • Health center reasonably nearby	• Schools Available • Banks in Villages (to ensure safety of transfer)	• Easy physical access and communications • Close to capital city • Access to health care and schools
Stipend Delivery	Monthly – by wire transfer	Monthly	Bimonthly - from contracted payment agencies
Relative amount of total stipend	22% of monthly income	-	18% increase average annual income
Educational Stipend	• Total 275 pesos/family/year[57] • Higher stipend for girls in secondary school • $US 7 in primary school • $US24 for boys and $US28 for	• Monthly grant per child, with slightly higher for secondary school than primary school. • $US 5/month for grades 2-5 • $US 10/month per child grades 6-11[58]	• Grant to attend school (US $9.33/month) • Annual grant per child for supplies, based on standard cost of supplies

[57] PROGRESA: A New Strategy to Alleviate Poverty in Mexico (de Leon, Parker, Hernandez, 1999). World Bank Social Policy Conference. http://wbln0018.worldbank.org/LAC/LACInfoClient.nsf/0/84bd33635a75a1ef852567fa007b3448/$FILE/Gomez%20Parker%20Hernandez.doc

[58] Source: Interregional Inequality Facility, (2006) Policy Brief #2. http://www.odi.org.uk/inter-regional_inequality/papers/Policy%20Brief%202%20-%20Colombia.pdf

	girls in secondary school		• $US 5 per child to be given to teacher
Education transfer dependent on household size?	Yes	Yes	No. However, supplies transfer is per child, as is supplement to the school.
Transfer adjusted for inflation.	Yes, semi-annually	Yes, semi-annually	No. Real value declined ~8% over pilot[59]
Monthly attendance requirement		80%	85%
Health Component	Package of basic health services	Children 0 -5 receive $30.00 US per month; growth & development checkups & vaccines. Courses for mothers.	Vaccinations, growth & development monitoring, anti-parasite drugs, vitamins
Nature of Health Provision	Mexican government: Ministry of Health and IMSS-Solidaridad (welfare to uninsured) Package of primary care services, food support and training	Municipal Health resources: Hospitals, "centros", and "puestos" (more in rural is l areas)	Government-contracted NGOs as health-care providers
Primary School Attendance Rates before program	90-94%[60]	80%	68.5%
Gender Gap in Schooling?	Yes	No – if any, more girls enrolled than boys	No – if any, more girls enrolled than boys
Organizations contracted for Impact Evaluation	IFPRI, others	Institute for Fiscal Studies; Econometria	IFPRI
Type of Evaluation	Randomized, experimental evaluation	Quasi-experimental	Randomized, experimental evaluation

[59] Source: IFPRI, 2005

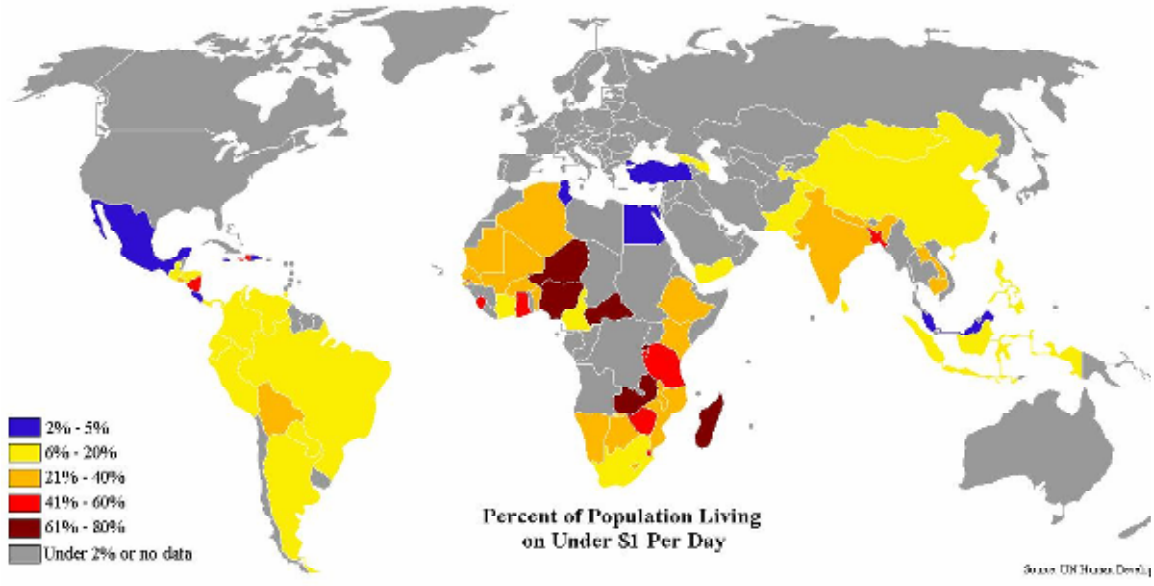
60 Evaluating the Impact of Conditional Cash Transfer Programs: Lessons from Latin America (Rawlings, 2003) http://www1.worldbank.org/sp/safetynets/publications/files/rawlings03cct.doc

Number of households in evaluation	24,000	19,007	1,746
Nutrition Component	• Food supplements and talks • $11/month stipend for children 4 months – 2 years and pregnant & lactating mothers	• Monetary supplement for families with children under 7 • Talks for mothers	• US $224.00/year; $18.67/month. • Talks for mothers by RPS-trained people to cover nutrition and health
Current Reputation	Highly acclaimed by initial impact evaluators, Mexican government, and World Bank. Considered model for social policy for impoverished.	Thought to be corner-stone of social policy in Colombia, no longer quick fix but long-term solution[61]	Pilot regarded as a success; renewed. Disbanded after re-election of Daniel Ortega in 2006.

[61] Source: Interregional Inequality Facility, (2006) Policy Brief #2. http://www.odi.org.uk/inter-regional_inequality/papers/Policy%20Brief%202%20-%20Colombia.pdf

Appendix 6:

World Poverty Map, Population Living on Under $1 Per Day



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